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**ENSR**

# Investigation Plan for Leaking Deep Multi-Aquifer Wells



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RETURN RECEIPT REQUESTED

December 30, 1993

Regional Administrator  
United States Environmental  
Protection Agency, Region 5  
ATTN: Darryl Owens  
Mail Code 5HS-11  
230 South Dearborn Street  
Chicago, Illinois 60604

President  
Reilly Industries, Inc.  
1510 Market Square Center  
151 North Delaware  
Indianapolis, Indiana 46204

Director, Solid and Hazardous  
Waste Division  
Minnesota Pollution Control Agency  
ATTN: Site Response Section  
520 Lafayette Road North  
St. Paul, Minnesota 55155

Commissioner  
Minnesota Department of Health  
717 Delaware Street S.E.  
P.O. Box 9441  
Minneapolis, MN 55440

RE: United States of America, et al. vs. Reilly Tar &  
Chemical Corporation, et al.  
File No. Civ. 4-80-469

Gentlemen and Commissioner O'Brien:

In accordance with the Agency's December 16, 1993 letter addressing a previous City submittal of an Investigation Plan for Leaking Deep Multi-Aquifer Wells pursuant to Section 10.1.1. of the Remedial Action Plan (RAP) in the referenced case, the City hereby submits a revised plan for the investigation of suspected multi-aquifer wells which may be adversely affecting the Mt. Simon-Hinckley, Iron-ton-Galesville, and Prairie du Chien-Jordan Aquifers.

Questions regarding the submittal may be directed to this office.

Sincerely,

A handwritten signature in blue ink, appearing to read "James N. Grube".

James N. Grube  
Director of Public Works

JNG/cmr  
enclosure

cc: Elizabeth Thompson (w/o enclosure)  
Bill Gregg (w/enclosure)  
Reilly File

**INVESTIGATION PLAN FOR  
LEAKING DEEP MULTI-AQUIFER WELLS**

**SUBMITTED TO THE**

**REGIONAL ADMINISTRATOR  
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION V**

**EXECUTIVE DIRECTOR  
MINNESOTA POLLUTION CONTROL AGENCY**

**COMMISSIONER  
MINNESOTA DEPARTMENT OF HEALTH**

**BY**

**THE CITY OF ST. LOUIS PARK, MINNESOTA**

**PURSUANT TO  
CONSENT DECREE - REMEDIAL ACTION PLAN SECTION 10.1**

**UNITED STATES OF AMERICA, ET AL**

**VS.**

**REILLY TAR & CHEMICAL CORPORATION, ET AL**

**UNITED STATES DISTRICT COURT  
DISTRICT OF MINNESOTA  
CIVIL NO. 4-80-469**

**DECEMBER 31, 1993**



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A





**SECTION A**  
**SITE MANAGEMENT PLAN**



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## **1.0 INTRODUCTION**

### **1.1 Purpose and Scope**

This Site Management Plan (Plan) outlines the scope of work to identify and investigate leaking multi-aquifer wells affecting the Prairie Du Chien-Jordan, Iron-ton-Galesville, or Mt. Simon-Hinckley Aquifers within a portion of the City of St. Louis Park, Minnesota. This work shall be completed in accordance with the Consent Decree - Remedial Action Plan (CD-RAP) for the Reilly Tar & Chemical Corporation National Priority List (NPL) Site in St. Louis Park, Minnesota. Included in this Plan are:

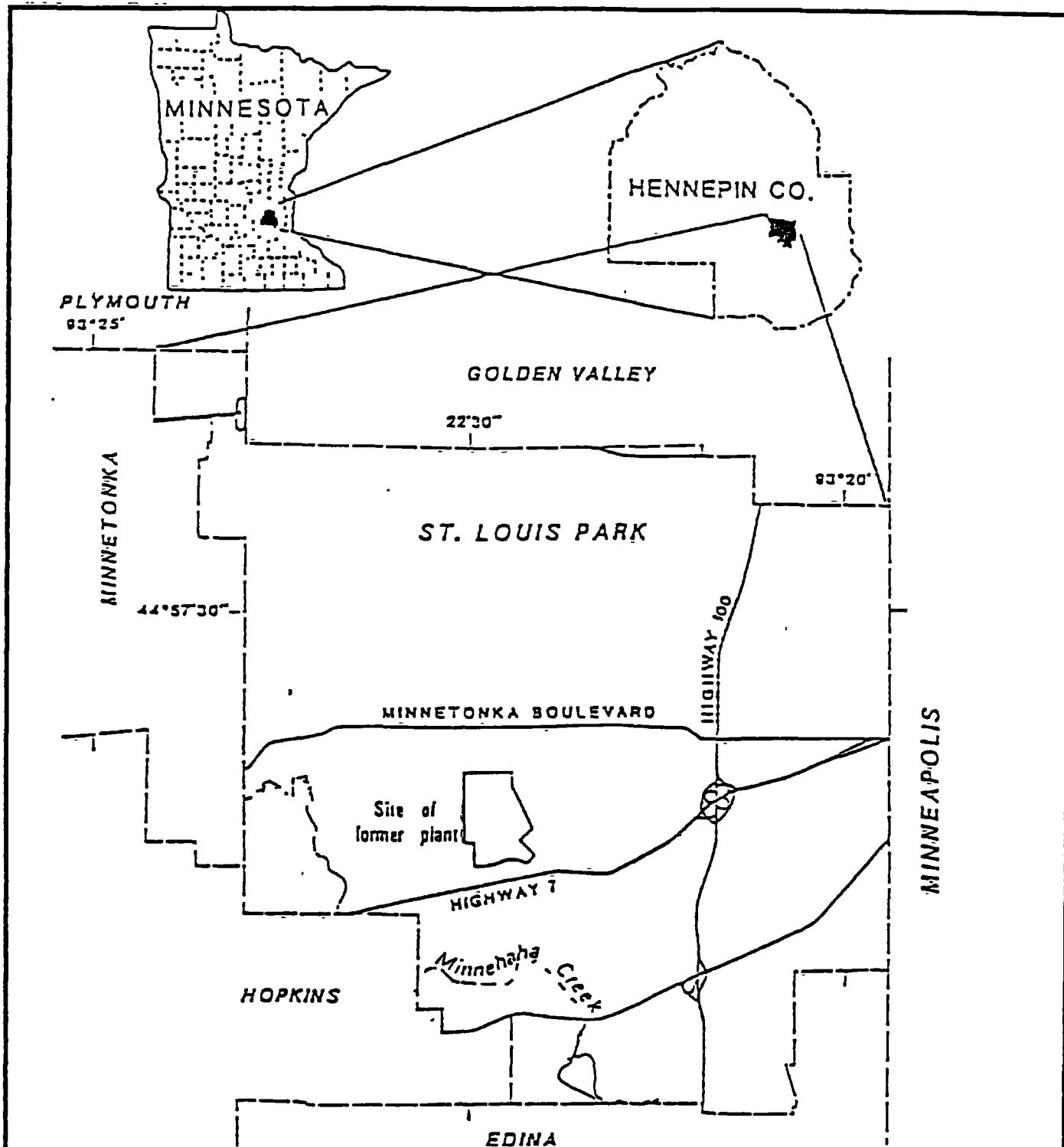
- Background information
- Well Investigation Plan
- Reporting requirements

### **1.2 Background**

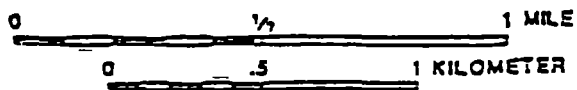
The former Reilly Site occupies 80 acres in St. Louis Park (Figure 1-1). A coal tar refinery and wood preserving plant was operated at the Site from 1917 to 1972. In 1972 the Site was sold and converted to residential and recreational uses. Also, a divided four-lane avenue and storm sewer improvements were constructed on the Site. Soil and surficial ground water contamination by a variety of coal tar-related chemicals have been observed in the immediate vicinity of the former plant site. In addition, polynuclear aromatic hydrocarbons (PAH), which are constituents of creosote and coal tar, have been measured in some of the bedrock aquifers in the St. Louis Park area.

The CD-RAP was developed to alleviate the contamination problem in St. Louis Park, and it includes the installation of a granular activated carbon (GAC) drinking water treatment system at St. Louis Park municipal well numbers 10 and 15; a system of pumping wells designed to remove and/or control the flow of PAH and phenolic contaminants in aquifers beneath St. Louis Park; remedial actions at and around the Site which will reduce the infiltration of water, thus controlling the movement of PAH and phenolics from contaminated surficial geological deposits and allowing for safe use of the Site and adjacent contaminated areas; monitoring of contaminants in all aquifers and in drinking water for St. Louis Park and selected neighboring communities to track the movement of contaminants and monitor their occurrence in drinking water; and other actions which will be implemented if contaminants are found to move in a manner which is not anticipated at this time.





SOURCE: From USGS Water Supply Paper 2211

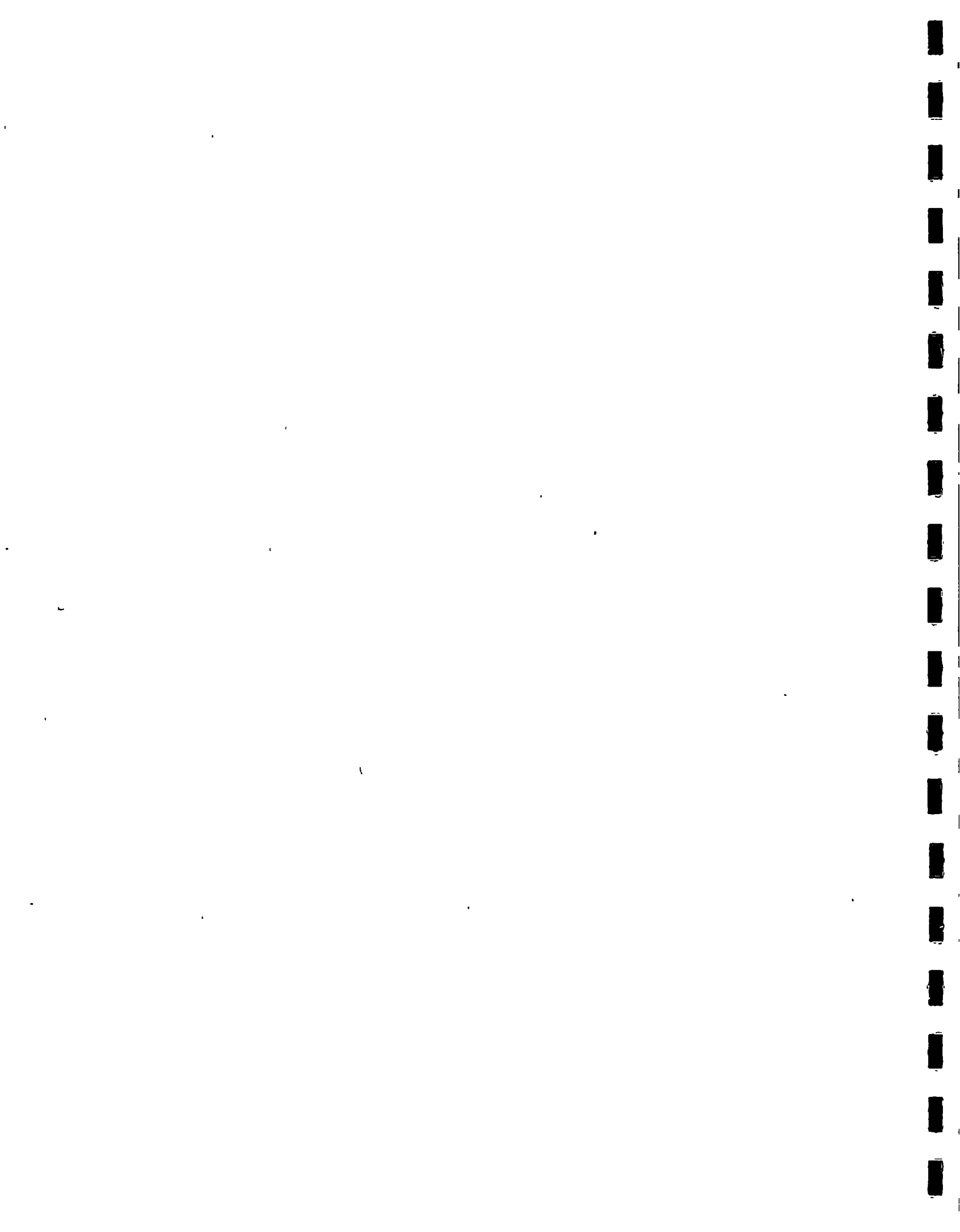


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FIGURE 1-1  
LOCATION MAP

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The three aquifers of concern for this multi-aquifer well investigation are the Prairie du Chien-Jordan, Iron-ton-Galesville, and Mt. Simon-Hinckley Aquifers. Pumping wells will remove and/or control the flow of PAH and phenolic contaminants in each of these aquifers. Pumping wells in the Prairie du Chien-Jordan Aquifer comprise a gradient control system that will capture ground water in the area of St. Louis Park defined in the CD-RAP (Figure 1-2) as follows:

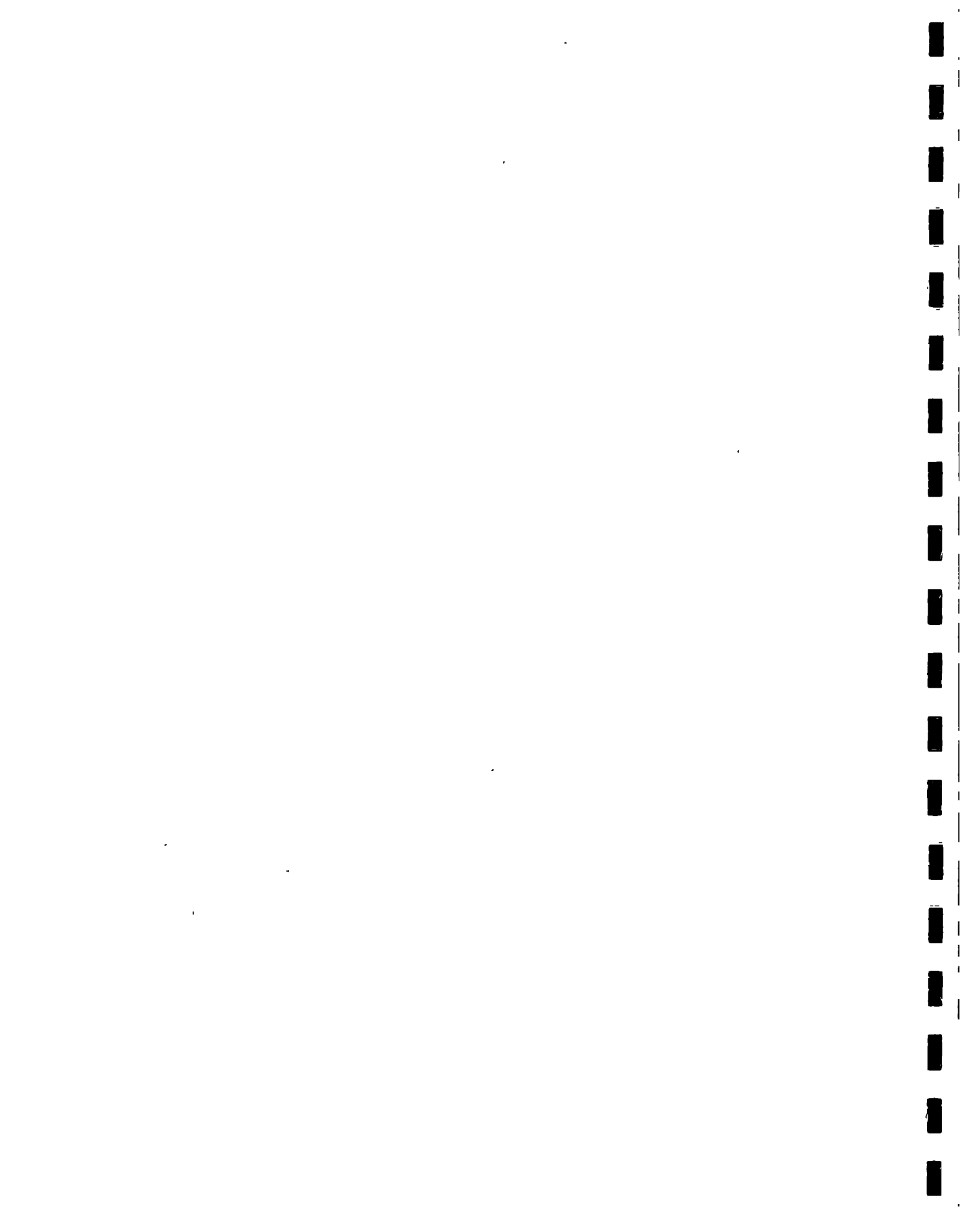
- The southern boundary is Excelsior Boulevard west of Trunk Highway (TH) 100 and West 42nd Street east of TH 100
- The eastern boundary is France Avenue
- The northern boundary is a line extending from well SLP 7 to the intersection of France Avenue and Minnetonka Boulevard, and west from SLP 7 to TH 169
- The western boundary is TH 169

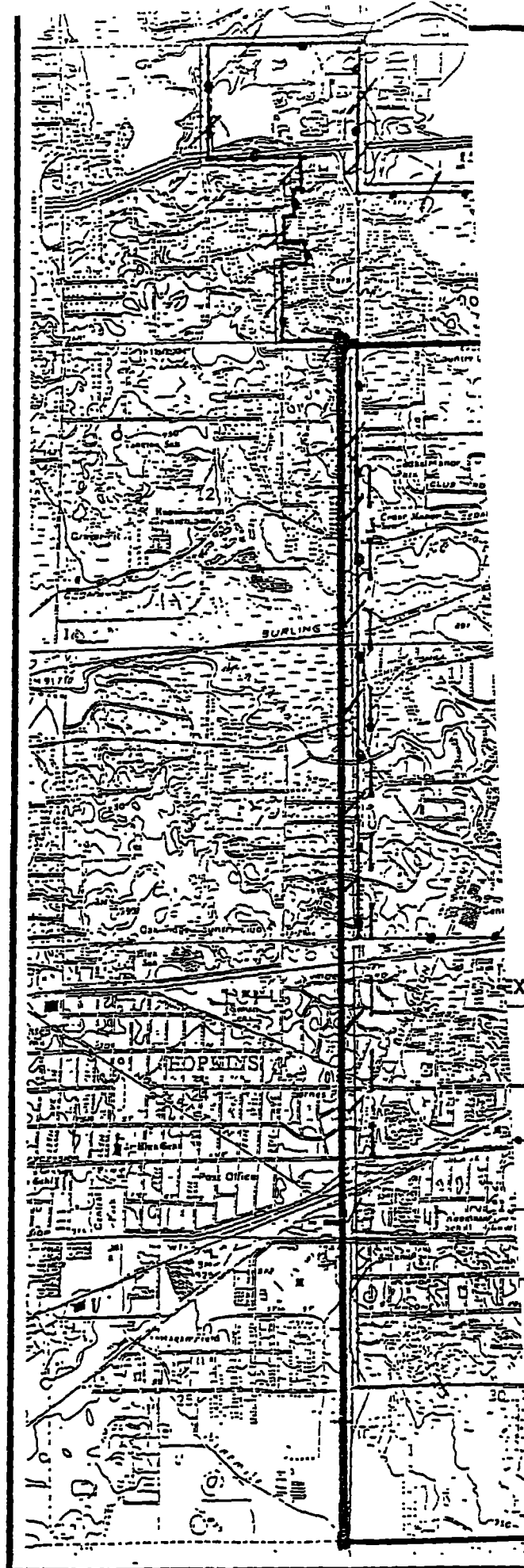
Contaminated water in aquifers above the Prairie du Chien-Jordan Aquifer lie within the capture area of the gradient control system.

### **1.2.1 Multi-Aquifer Well Hydraulics**

Any well that is hydraulically connected to more than one aquifer is by definition a multi-aquifer well. Such wells may provide pathways for shallow contaminants to migrate into deeper aquifers. Recognizing this potential problem, the Minnesota Water Well Construction Code now prevents the construction of multi-aquifer wells. Most multi-aquifer wells are therefore old and the corresponding lack of information necessitates this investigation.

The movement of water between aquifers in a multi-aquifer well may be due to original open-hole construction, leaks in the casing, and/or flow in the annular space between casing and borehole. Water may then flow from one aquifer to another in response to differences in hydraulic head between aquifers. Within the study area the hydraulic head decreases with depth, and flow in multi-aquifer wells is downward. The water level in a multi-aquifer well is a function of each aquifer open to the well (Figure 1-3), and local ground water gradients may be modified as a result (Hult and Schoenberg 1984).





#### EXPLANATION

Limit of CWI File Search

St. Louis Park City Limits

Limits of Hickok (1983) Study

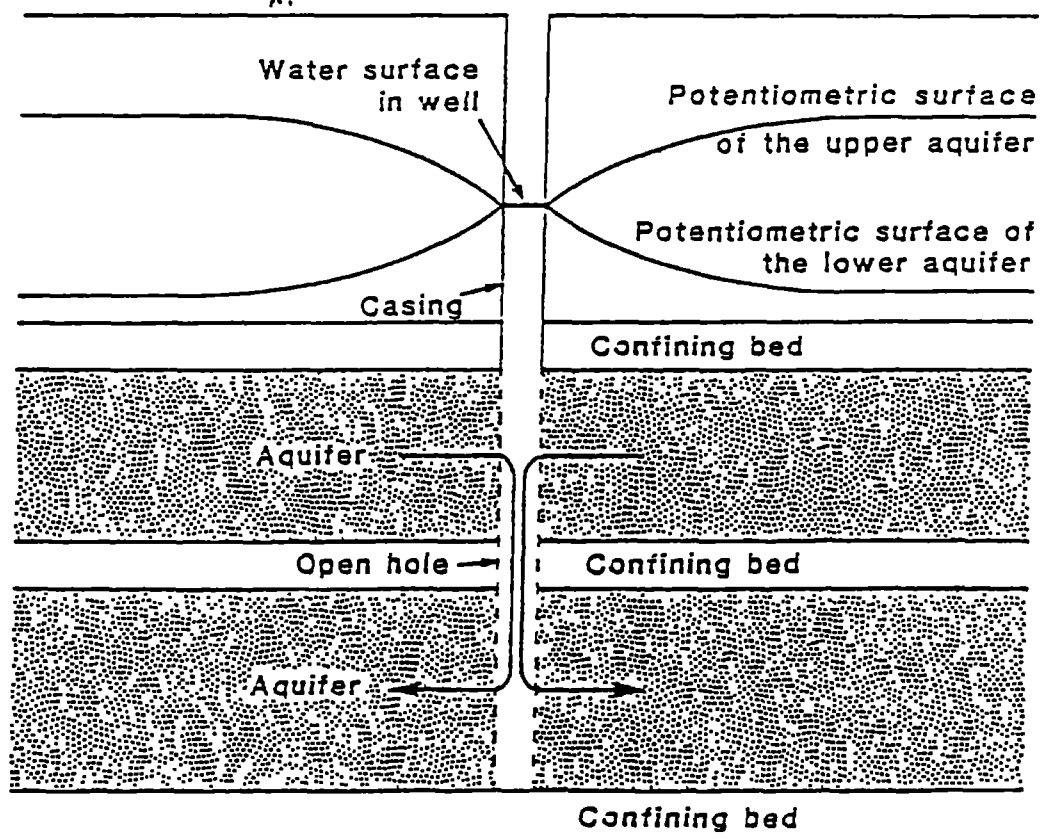
Limits of Capture Zone for Opc-Cj  
Aquifer Gradient Control System

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Figure 1-2  
BOUNDARY DEFINITION MAP





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FIGURE 1-3  
SCHEMATIC HYDROLOGIC SECTION  
SHOWING MAW HYDRAULICS  
( Hult and Shoenberg, 1984 )

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### **1.2.2 Consent Decree Requirements**

The CD-RAP requires that within one year of the Effective Date, a plan for investigating suspected deep multi-aquifer wells must be submitted to the Minnesota Pollution Control Agency (MPCA), the Minnesota Department of Health (MDH), and the U.S. Environmental Protection Agency (EPA). Wells which may be leaking water exceeding any of the Drinking Water Criteria for PAH or 10 micrograms per liter of phenolics into the Mt. Simon-Hinckley Aquifer, Iron-ton-Galesville Aquifer, or portions of the Prairie du Chien-Jordan Aquifer located outside the capture area of the Prairie du Chien-Jordan Aquifer gradient control system (Figure 1-2) must be investigated.

The techniques for analyzing each such suspected deep multi-aquifer well must include at a minimum for each well: static water level measurements; water quality monitoring; spinner logging; caliper logging; and E- or natural gamma logging. Additional investigation techniques such as downhole television logging are permitted.

### **1.2.3 Previous Study**

In 1983, E.A. Hickok & Associates (Hickok) compiled a table of information for all of the wells in the study area (Figure 1-2). Information collected from drillers, government agencies, and a door-to-door survey included: unique well number; owner; location; geologic log; casing schedule; depth; and current status (active, inactive, existence uncertain, abandoned). The Hickok study area includes the entire capture zone for the Prairie du Chien-Jordan Aquifer gradient control system. The Hickok table provides information on all wells identified by previous studies of the Reilly Site, including all wells known by the United States Geological Survey (USGS). Since 1983, additional and updated well information of this type has been compiled in the County Well Index (CWI). This information was also reviewed in the study area defined on Figure 1-2. The study includes areas south of wells W48 and SLP4, as requested by MPCA (1993, Appendix 1).

### **1.2.4 Suspected Deep Multi-Aquifer Wells**

The areal extent of contamination in all aquifers above the Prairie du Chien-Jordan Aquifer lies within the CD-RAP-defined capture area of the Prairie du Chien-Jordan Aquifer gradient control system. Multi-aquifer wells that terminate in the Prairie du Chien-Jordan Aquifer, and that are located outside the CD-RAP-defined capture area are excluded from the Investigation Plan because over-lying contamination has not been found to extend that far. Also, in accordance with the CD-RAP, multi-aquifer wells that terminate in the Prairie du Chien-Jordan Aquifer that are located within the gradient control system capture area are excluded from the Investigation Plan. Therefore, only Iron-ton-Galesville and/or Mt. Simon-Hinckley Aquifer multi-aquifer wells need to be investigated. Figure 1-2 shows the search area for deep multi-aquifer wells investigated by Hickok as well as searched in the CWI. Appendix 2 is a tabulation of all wells identified by



Hickok or the CWI that are potentially deep multi-aquifer wells. Appendix 2 includes known multi-aquifer wells and wells for which there is no information to rule out the possibility that they are deep multi-aquifer wells.

The Hickok study identified five deep multi-aquifer wells that were formerly open to the Mt. Simon-Hinckley or Ironton-Galesville aquifers (W38, Milwaukee Road Railroad; W23, Republic Creosote; W50, Prestolite well; W105, Minnesota Sugar Beet; and W107, Interior Elevator). However, four of these have been abandoned or reconstructed as single-aquifer wells by Reilly or the State, while the location of the fifth (W107) remains unknown after a two-year search by City of St. Louis Park, the MDH, and the USGS. Since this deep multi-aquifer well cannot be located, no investigation of it is possible.

No known deep multi-aquifer wells open to the Mt. Simon-Hinckley or Ironton-Galesville aquifers were identified in the CWI. It therefore appears there are no known deep multi-aquifer wells to be investigated.

Appendix 2 includes approximately 300 wells found during the Hickok study and one well identified by the CWI for which there is limited information. By inspecting City of St. Louis Park zoning records included in Appendix 3, many of these wells were found to be located on residential property (property that has never historically been zoned industrial or commercial) and are anticipated to be shallow (Drift-Platteville or St. Peter Aquifer wells). Therefore, those residential wells will not be investigated as part of this deep multi-aquifer well plan. There are 72 remaining wells (Table 1-1) that are located on properties that are zoned commercial, industrial, or other nonresidential uses which have limited well construction specifications. These 72 wells will be the subject of this multi-aquifer well investigation plan.

### 1.3 Well Investigation Plan

Reasonable efforts will be made to determine the location and existence of each well listed in Table 1-1. It may not be possible to locate all 72 wells listed in Table 1-1 because:

- o The information gathered by Hickok/CWI that provided evidence that a particular well exists may be incorrect.
- o A particular well may be hidden or destroyed due to recent land use changes (e.g., construction or demolition activities).

The investigation of existing wells listed in Table 1-1 will start with well diameter, static water level, and well depth measurements. These measurements will be used to determine if the well is deep enough to penetrate the Ironton-Galesville Aquifer or deeper. If the well diameter is four



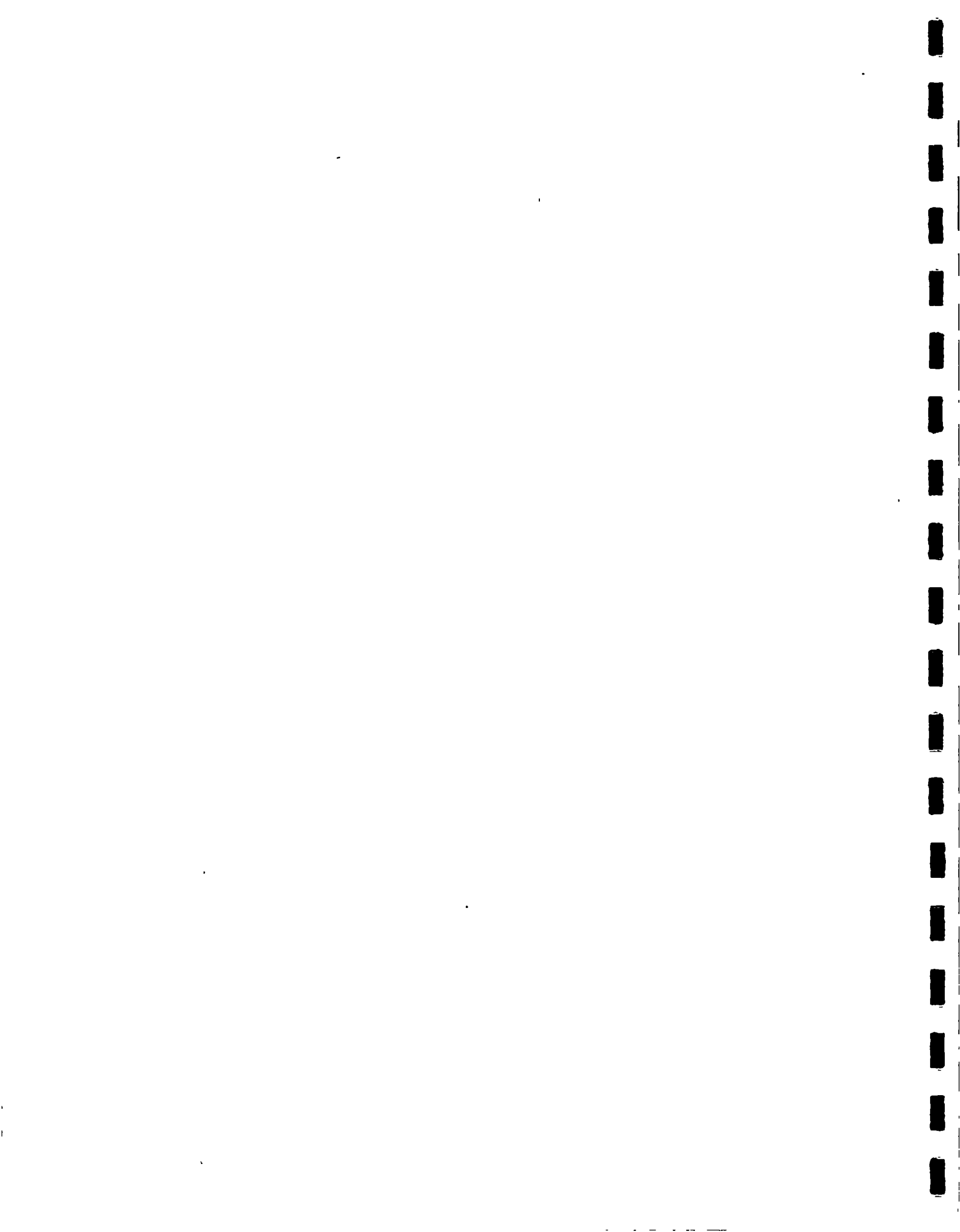
**TABLE 1-1**

**Possible MAWs**

Unique Well #	Owner	Location
216071	Northland Aluminum	3245 Raleigh
216091	NON-RESPONSIVE	
216104	Interior Elevator	Salem and R.R. tracks
216106		Oxford and Dakota
216128	Interior, Elevator	
232514	Nelson House/Carney	6006 Excelsior
232515		6305 Cambridge
232516		6314-18 Cambridge
232518	S & S Welding	6506 Cambridge
232519	S & S welding	6510 Cambridge
232521	Viking Soap & Chemical	6529 Cambridge
232539	Warner Hardware	5025 Excelsior
232540	Ostund Jewelry	5405 Excelsior
232541	Woodale Office Bldg.	5407 Excelsior
232542	NON-RESPONSIVE	
232543	Brent Displays	5807 Excelsior
232548	Copper Sales, Inc	2220 Florida Ave
232556	NON-RESPONSIVE	
232557		
232558		
232571		19th and Blackstone
232574	Engleside Dairy	4900 Excelsior
232579	Hall Equipment	2360 Highway 100
232582	NON-RESPONSIVE	
232595		

**TABLE 1-1****Possible MAWs**

<b>Unique Well #</b>	<b>Owner</b>	<b>Location</b>
232598	Home Hardware	6414 W. Lake St.
232605	<b>NON-RESPONSIVE</b>	
232606		
232607		
232615	Standard Plumbing	8015 Minnetonka Blvd
232617	<b>NON-RESPONSIVE</b>	
232618		
232619		
232620	Ganyo, Earl J.	3020 Natchez
232623	Tanke, Ina M.	2808 Oregon
232648	Prestige Lincoln	6629 Wayzata Blvd
232649	<b>NON-RESPONSIVE</b>	
232650		
232651	Voyles, Edward J.	3021 Natchez
232651	Consumer Brokers	3521 Webster Ave.
232660	<b>NON-RESPONSIVE</b>	
232661		
232669		
232670		
232681		
232681	Pic-A-Pop	3550 Brunswick
232683	H. J. Shotwell Co.	5721 W. 36th St
232707	<b>NON-RESPONSIVE</b>	
232741		
232751		
232760		
232771		



**TABLE 1-1**

**Possible MAWs**

Unique Well #	Owner	Location
232780	NON-RESPONSIVE	
232791		
232810	Ace Mfg., Inc.	3825 Edgewood
232862	NON-RESPONSIVE	
232896		
232904		
232908		
232920		
232950		
232951		
232972		
232981		
232988		
232992		
233321		
233324		
233325		
233329		
233339		
233346		
233355		
223773		



inches or less, it will be assumed to be a shallow well. The static water level measurements should indicate if the water level in the well matches the water level expected for a well of the depth that is measured. This will eliminate the potential uncertainty that could result if the well was obstructed and only a depth measurement was made. If the depth and static water level measurements result in any uncertainty as to whether or not the well is a possible Ironton-Galesville or Mt. Simon-Hinckley Aquifer, multi-aquifer well, then the well will be inspected and logged using downhole video equipment. If proper physical access is available, then any obstructions will be removed from the well, if possible.

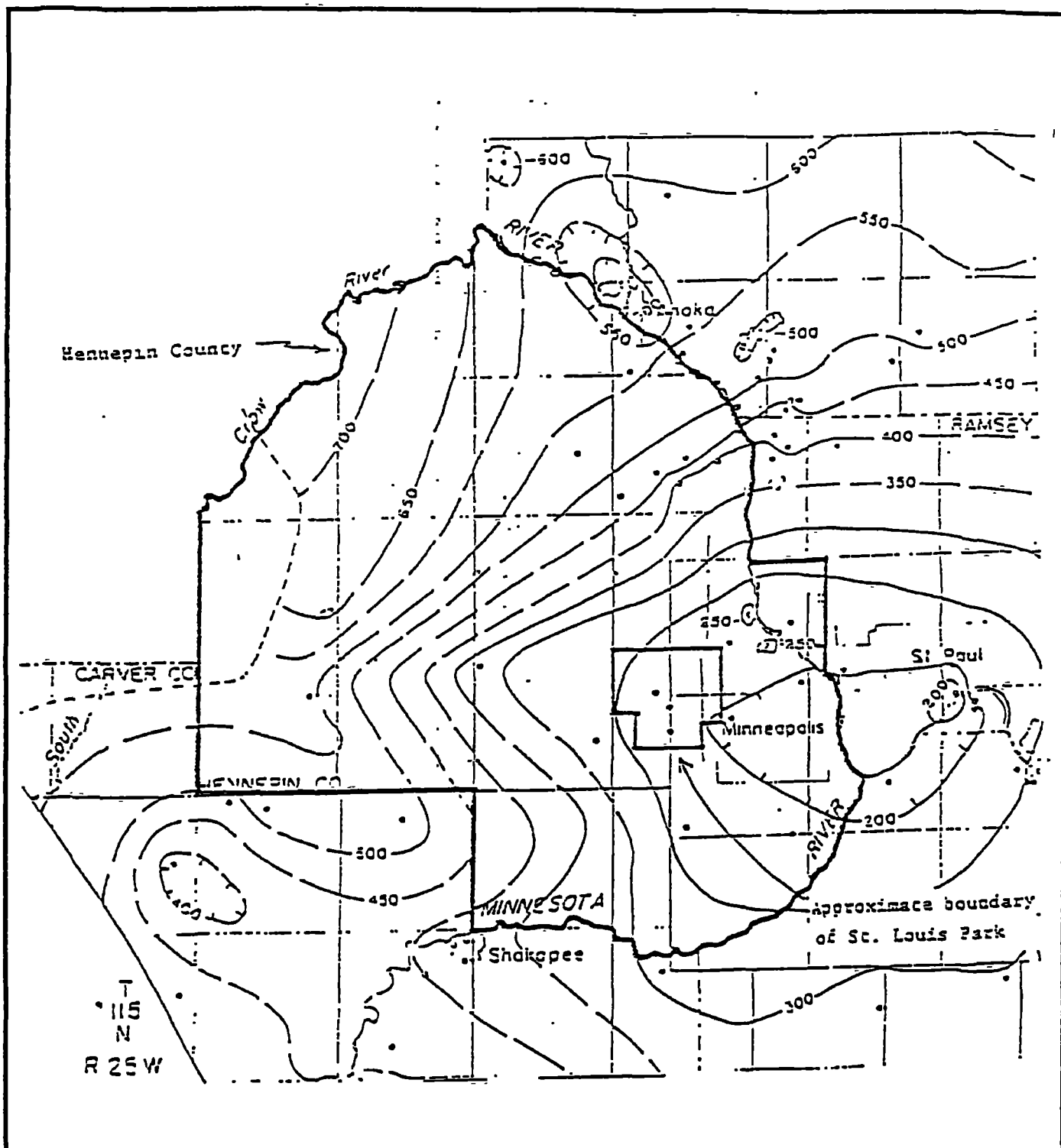
Figure 1-4 shows the elevation of the top surface of the Ironton-Galesville Aquifer in the St. Louis Park area. The approximate surface elevation of each well will be compared with Figure 1-4 to determine if the measured well depth is sufficient to suspect that the well may be a candidate deep multi-aquifer well.

Candidate deep multi-aquifer wells will be further investigated by making geophysical logs and collecting ground water samples. The geophysical logs will include spinner (glow) log, caliper log, and natural gamma log. Ground water samples representative of the deepest aquifer penetrated by the well will be collected and analyzed for PAH and phenolics in accordance with the procedures given in the 1994 Annual Sampling Plan (1993). For this purpose, samples will be collected from the discharge of a submersible pump positioned at the level of the deepest aquifer penetrated by the well, once field measurements of pH, conductivity, and temperature have stabilized in accordance with MPCA procedures (Sabel and Clark 1985).

#### **1.4 Reporting**

Upon completion of all field and laboratory activities, a report will be issued that includes the findings of the investigation and recommendations for multi-aquifer well reconstruction or abandonment. The report will contain all data collected during this study including field measurements and copies of geophysical logs. Video logs of the wells will be described in the text of the report, and will be retained by the City of St. Louis Park for subsequent viewing by the agencies if requested. The report will be issued within one year of approval of this Investigation Plan, as required by the CD-RAP.





Contour interval refers to altitude above  
National Geodetic Vertical Datum



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ENSR Consulting and Engineering

FIGURE 1-4  
STRUCTURE CONTOURS AT THE TOP OF  
THE IRONTON-GALESVILLE AQUIFER IN  
HENNEPIN COUNTY  
(NORVITCH, ET. AL, 1974)

DRAWN: DWJ	DATE: December 21, 1993	PROJECT NO.: 1620013500	REV: 0
FILE NO:	CHECKED: WMG		

---

## **2.0 REFERENCES**

City of St. Louis Park Zoning Records, 1949, 1987, 1993.

E.A. Hickok and Associates, 1983. "Technical Memorandum, February 16, 1983, Tables Revised, June, 1983: St. Louis Park Well Abandonment Project-Well Search and Inventory."

Hult, M.F. and M.E. Schoenberg, 1984. "Preliminary Evaluation of Ground-Water Contamination by Coal-Tar Derivatives, St. Louis Park Area, Minnesota." U.S. Geological Survey Water - Supply Paper 2211.

Minnesota Pollution Control Agency, Letter to the City of St. Louis Park. Re: United States of America *et. al.*, vs. Reilly Tar and Chemical Corporation *et. al.* File No. CIV 4-80-469. September 3, 1993.

Norvitch, R.F., T.G. Ross, and A. Brietkrietz, 1974. "Water Resources Outlook for the Minneapolis-St. Paul Metropolitan Area, Minnesota". Prepared by the U.S. Geological Survey and published by the Metropolitan Council of the Twin Cities Area.

Sabel, G.V. and T.P. Clark, 1985. "Procedures for Ground Water Monitoring: Minnesota Pollution Control Agency Guidelines." April 1985.

Wahl, T.E. and R.G. Tipping, 1991. "Ground Water Data Management - The County Well Index." Prepared by the Minnesota Geological Survey and the University of Minnesota.

City of St. Louis Park, 1993. Sampling Plan for 1994. October 31, 1993.





**APPENDIX 1**

***Minnesota Pollution Control Agency  
Letter to City of St. Louis Park***



# Minnesota Pollution Control Agency

SEP 03 1993

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ADMINISTRATION  
CITY OF ST. LOUIS PARK

City Manager  
City of St. Louis Park  
5065 Minnetonka Boulevard  
St. Louis Park, Minnesota 55416

President  
Reilly Industries  
1510 Market Square Center  
151 North Delaware Street  
Indianapolis, Indiana 46204

Gentlemen:

RE: United States of America et al. vs. Reilly Tar and Chemical Corporation et al.  
File No. CIV 4-80-469

The Minnesota Pollution Control Agency (MPCA) and the U.S. Environmental Protection Agency (EPA) have reviewed the document entitled Investigation Plan for Leaking Deep Multi-Aquifer Wells which was submitted in November 1987. In the past, MPCA staff have had discussions with the city of St. Louis Park on how to proceed on the best way to handle the Leaking Deep Multi-Aquifer Well(s) (MAW). Our latest meeting on June 16, 1993, with Justin Blum, Minnesota Department of Health and Bill Gregg, of ENSR, has helped clarify this issue. Here are our comments and suggested revisions of specific portions of the document:

Page 3: Previous Study - The County Well Index and the files of the Health Department and the USGS contain additional information on wells in the area collected since the 1983 Hickok Well Survey was completed. This information should be included in the data search which provides the basis for selecting wells for further investigation.

Page 6: Suspected MAW - The zone of contamination in the St. Peter Aquifer extends beyond the limits of the Prairie Du Chien - Jordan gradient control area. The zone of contamination in the Prairie Du Chien - Jordan Aquifer also appears to extend beyond the southern boundary of the gradient control area. Prairie Du Chien - Jordan MAW should be investigated in the area south of W48 and SLP 4. The Hickok study identified approximately 300 wells for which limited information is available, of these 37 were selected for further investigation. The County Well Index contains additional information which has been gathered since the Hickok Study on wells in the area. This information should be researched, tabulated, and used to generate the list of wells for further study. Deleting all wells, which are on residential property from further study, is not an acceptable method for limiting the number of wells for

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520 Lafayette Rd St Paul MN 55155-4194 (612) 296-6300 Regional Offices Duluth • Brainerd • Detroit Lakes • Mars • Rochester

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City Manager  
City of St. Louis Park  
President  
Reilly Industries  
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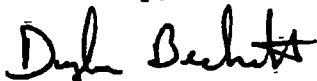
further study. Deep wells may exist on property which was industrial at the time of installation and has subsequently become residential. Past land uses should also be taken into account in determining which wells are likely to be deep MAW's.

Page 7: Table 1 - This table shows only the wells which were selected for further investigation. Please include all wells which were a part of the initial screening for further investigation and enough data on each well to make clear the rationale for including or excluding it from further study. Include additional well data from other sources as detailed above.

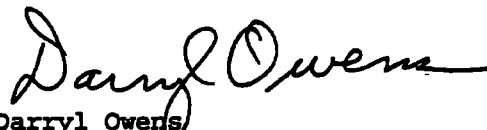
Page 8: Reporting - Well information and any other data evaluated as part of the study should also be submitted in standard digital format (Lotus 123 or Excel files).

Please make the modifications detailed above to the document and resubmit it for the MPCA and the EPA's approval. If you have any questions, or would like to discuss this matter further, please contact either Project Manager.

Sincerely,



Douglas Beckwith  
Project Manager  
(612) 296-7715  
Superfund Unit  
Site Response Section  
Ground Water and Solid Waste Division  
Minnesota Pollution Control Agency



Darryl Owens  
Remedial Project Manager  
(312) 886-7089  
Remedial Enforcement  
Response Branch  
U.S. Environmental Protection Agency

DB/DO:jlmm

1



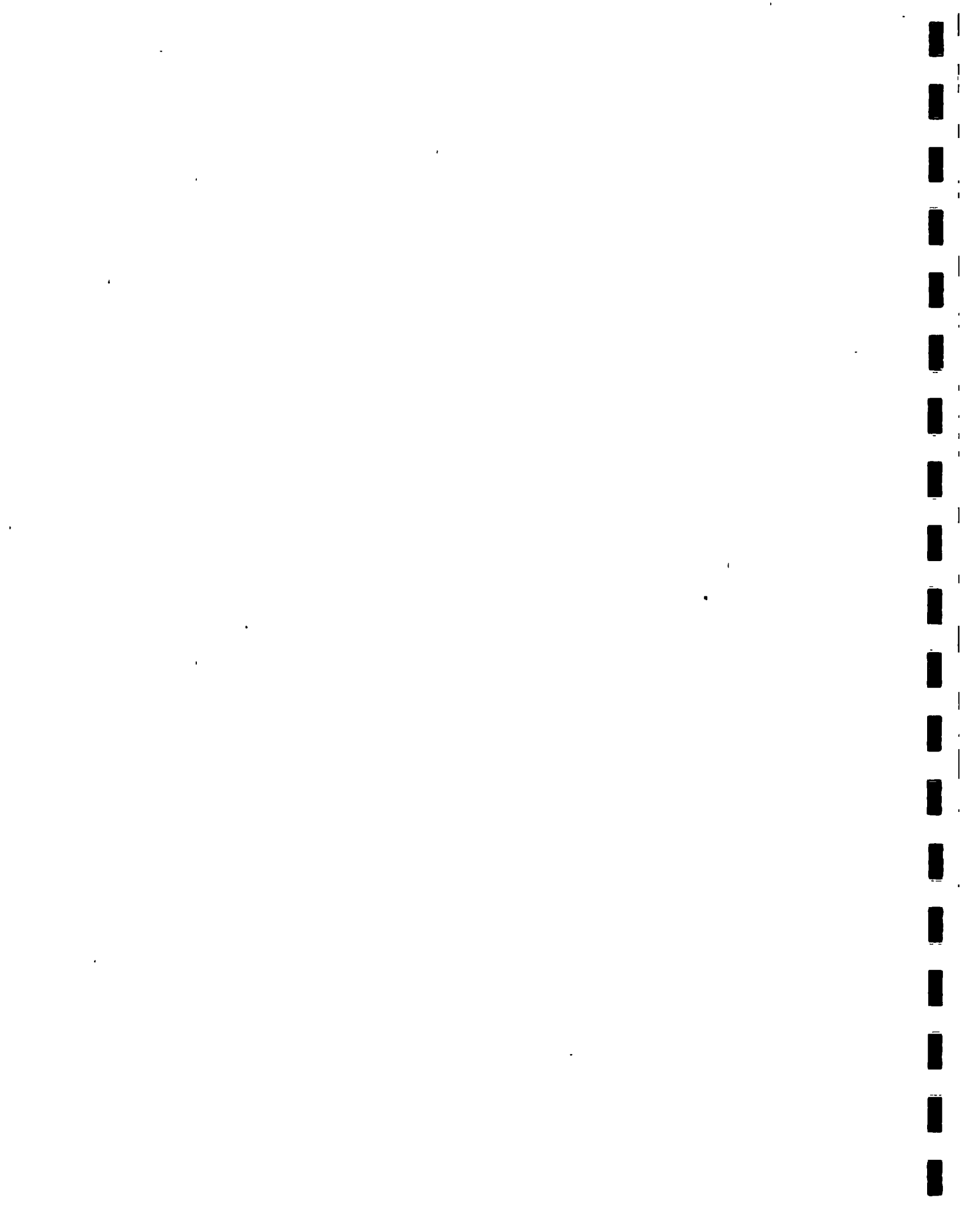
**APPENDIX 2**

**Hickok Report  
County Well Index**



## NOTES

- |      |   |
|------|---|
| No * | Well omitted because indicated depth reveals well was terminated above Ironton-Galesville Aquifer                               |
| 1    | Well omitted because diameter of well was 4 inches or less, which indicates well would be shallower than the Ironton-Galesville |
| 2    | Well omitted due to municipal status  |
| 3    | Well omitted due to reconstruction of well as a result of the Reilly Corrective Action Plan                                     |
| 4    | Well abandoned according to MPCA list   |
| 5    | Well shallower than the Ironton-Galesville Aquifer according to MPCA list   |
| 6    | Well shallower than the Ironton-Galesville Aquifer according to CWI   |
| 7    | Well shallower than Ironton-Galesville Aquifer according to Hickok Report   |
| 8    | Typo  |
| 9    | Well omitted due to well always existing on residential property since 1949   |
| 10   | Well omitted because well beyond CD/RAP defined gradient control boundaries   |



SLP - WSI

RECEIVED

FEBRUARY 16, 1983  
*Attached Tables Revised*  
*June 1983 HJS*

FEB 22 1983  
MINN. POLLUTION  
CONTROL AGENCY

ST. LOUIS PARK WELL ABANDONMENT PROJECT -  
WELL SEARCH AND INVENTORY

THIS TECHNICAL MEMORANDUM SUMMARIZES THE WELL  
SEARCH AND INVENTORY IN THE ST. LOUIS PARK  
AREA. OVER 500 WELLS WERE LOCATED IN ADDITION  
TO THE NEARLY 300 PREVIOUSLY KNOWN WELLS. AN  
INVENTORY OF 815 WELLS IS INCLUDED WITH  
VARIOUS INFORMATION ON THE WELLS. THE  
ACCOMPANYING BASE MAP AND OVERLAYS SHOW THE  
LOCATION OF EACH WELL.

PREPARED BY:  
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## TECHNICAL MEMORANDUM

Enclosed is a summary of the Well Search and Inventory conducted in St. Louis Park, and portions of Hopkins and Edina.

### Introduction

The project area includes St. Louis Park, Hopkins east of Highway 18 and the area of Edina north of Interlachen Boulevard and West 50th Street.

Several agencies were contacted to supply information on known wells in the project area. The Minnesota Geological Society (MGS) supplied computerized printouts of wells in the project area. Additional wells have been coded but not entered on the computer system at this time. The U.S. Geological Survey (USGS) supplied information on selected wells in the St. Louis Park area. The Minnesota Department of Health (MDH) provided information on several wells pertinent to this inventory. St. Louis Park, Edina and Hopkins were contacted to assist in locating additional wells within their respective cities. St. Louis Park was especially helpful in supplying records on specific properties. In addition, well drilling companies were contacted to supply information within the project area.

This file search produced approximately 300 wells. Many of these are commercial, industrial or municipal wells.

An intensive search was made of the door-to-door search area. The door-to-door search area includes the area bounded by west 28th Street on the north, France Avenue on the east, West 40th Street and Excelsior Boulevard on the south and Virginia Avenue on the west. According to the 1980 census there are 18,055 housing units in St. Louis Park. A housing unit is a house, an apartment, a group of rooms, or a single room, occupied as separate living quarters, or if vacant, intended for occupancy. In addition, commercial/industrial facilities were contacted within the door-to-door search area.

Approximately 7300 owners or occupants were contacted within the door-to-door search area. These contacts yielded approximately 4500 responses. Those who were not available during the first attempt were requested to contact the contractor. Three hundred seventeen owners or occupants returned calls. The second attempt was made by phone producing approximately 1000 responses. A third attempt yielded an additional 800 responses. Approximately 700 owners (less than 10%) were not available during the attempted contacts.

Over 500 suspected wells were found during the door-to-door search. An attempt was made to visit each of these wells in order to gather further information, verify the location of the well, and photograph the well casing, pump, or other evidence of the well.



## Discussion

Most of the "new" wells found in the well search were residential wells. As expected, few of the owners were able to supply additional information. A search of property files, building permits and specific requests to well drillers may produce more information. It is anticipated that a majority of these wells are approximately 100 feet deep.

Several wells in the project area were located from information supplied by local well drillers. In those cases considerably more information is known about the wells.

A table is attached to this memorandum which includes pertinent information for each well in the St. Louis Park area. The key at the beginning of the table will aid in interpreting the data. The wells are listed in numerical order by unique well number. Project numbers are listed where they have been assigned. The owner and location are given. In some cases a government agency is listed as owner. Geologic logs and casing schedules are given where available. Where there is only one number given for the log with no formation, the number indicates the depth of the well. Other places the formation is listed with no depths. This indicates the formation in which the well is finished. The 'C' code indicates the certainty of the data. In some cases there is no uncertainty but at the same time there is little data. This would indicate certainty of the information presented. The 'A' code indicates the activity of the well. The unknown (0) category includes wells which are known to exist but their current status is uncertain. The active (1) category includes wells which are currently being used for potable use or in a few cases are intended to be used for potable use as in the case with several St. Louis Park municipal wells. The active (2) category includes wells which have been used recently or could be used but are not intended for potable use. Those include residential wells used for watering lawns, industrial/commercial wells for air conditioning and monitoring wells. Category 3 includes inactive wells. The wells were installed, casings still exist and in some cases pumps are attached but they are not functional. Category 4 lists suspected wells. Wells are suspected to exist at these locations but no verification has been possible. The abandoned (5) category includes only those wells which are known to have been properly abandoned. The following tables lists the number of wells in each category.

### ACTIVITY OF WELLS

#### Category

0 - Unknown	310
1 - Active, potable	36
2 - Active, other	74
3 - Inactive	245
4 - Suspected	142
5 - Abandoned	8

Total: 815

The status of each well is given to show the verification of each well. In the case of MGS, USGS and MDH, these agencies have done previous work in verifying the location and use of these wells. Wells which were visited in the field but a photograph was useless or impossible to obtain were listed as FIELD verified. Wells which were field verified and a photograph taken were given a PHOTO status. In some cases, citizens preferred not to be visited. These were given a OWNER status. Some of these owners reported there was nothing left to see. Some owners indicated the presence of a well but were unavailable for a follow-up visit. These wells are listed with a NONE status indicating no verification.

The map overlay on which each well is located is shown. Overlay 1 includes those wells which had previously been assigned unique well numbers. Overlay 2 shows wells which were found in this search and inventory. Overlay 3 shows locations of wells which are suspected to exist. Nearly twice as many wells have been found to exist than were known previously.

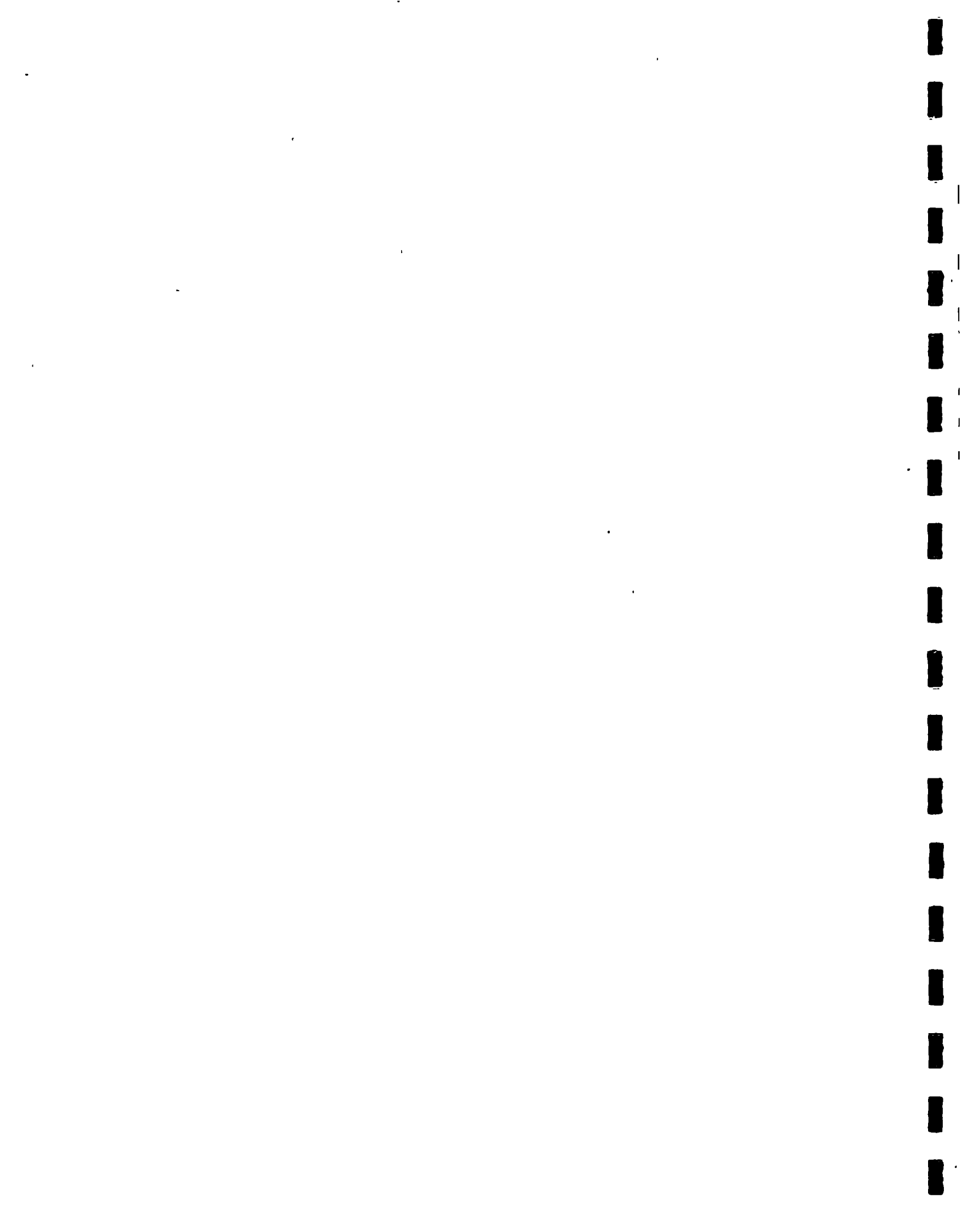
The source or sources of data from which their information was gathered is shown under source.

### Mapping

A set of maps and overlays accompany this memorandum. A base map includes the project area as described earlier. The base map is divided in two pieces. The northern portion includes the project area in St. Louis Park north of 34th Street. The southern portion includes areas of St. Louis Park, Hopkins and Edina south of 34th Street. Wells which had previously been identified and assigned a unique well number are mapped on overlays IN and IS. Overlay IN covers the northern base map; overlay IS covers the southern base map. These overlays include 284 well locations scattered throughout the project area.

The second set of overlays (2N and 2S) locate wells known to exist based on this well search and inventory. These overlays indicate the locations of 385 wells concentrated in the door-to-door search area. Notice that certain areas seem to have a concentration of wells indicating development of an area prior to installation of city water.

Suspected wells which have not been verified are mapped on the third set of overlays (3N and 3S). These overlays show the suspected location of an additional 146 wells. Many of these wells are again located within the door-to-door search area.



### Conclusion

Over 500 wells were found in this search and inventory. Presentation of all known and suspected wells will aid in getting a big picture of the groundwater contamination problem in St. Louis Park. This study located more wells than were thought to exist in the project area. It is anticipated that in some areas every house has a well even though homeowners indicated otherwise.

Additional information should be sought on the wells found during this search and inventory.



# KEY FOR ST. LOUIS PARK WELL INVENTORY

Columns	Description
1-6	Unique Well Number
8-11	Project Number
13-30	Owner
32-47	Location
49	City:        S - St. Louis Park        E - Edina        H - Hopkins
51-58	Phone Number
60-63	Elevation, NGVD, feet
66-76	Geologic Log, depth, feet and formation
	QUA    Quaternary

ST. LOUIS PARK  
WELL SEARCH AND INVENTORY

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source						
NON-RESPONSIVE					909	0-100 QUA 100-107 PVL 107-272 STP 272-280 PUC	0-246	4	0	0	MGS	1	01 4					
					149710	100	U.S.G.S.	31st & Oregon	S	910	0- 73 QUA 73- 89 PVL	0- 74	4	0	2	USGS	1	01 4
					149711	101	U.S.G.S.	36 and Wooddale	S	910	0- 80 QUA 80-106 PGW	0-103	4	0	2	USGS	1	01 4
					160018	24	U.S.G.S.	Lake & Louisiana	S	893	0- 81 QUA 81- 83 PVL 83- 86 GWD 86- 90 STP	0- 81 0- 87	8 4	0	2	USGS	1	01 4
160030	116	U.S.G.S.	36th & Webster	S	910	0- 67 QUA	0- 63	4	0	2	USGS	1	01 4					
160031	117	U.S.G.S.	36th & Wooddale	S	918	0- 72 QUA	0- 68	4	0	2	USGS	1	01 4					
165576	120	U.S.G.S.	36th & Brunswick	S	920	0- 96 QUA 96-107 PVL 107-109 GWD	0- 98	4	0	2	USGS	1	01 4					
165577	121	U.S.G.S.	Justad Park	S	918	0-115 QUA	0-109	4	0	2	USGS	1	01 4					
165578	122	U.S.G.S.	39th & Yosemite	S	920	0-120 QUA 120-239 STP	0-217	4	0	2	USGS	1	01 4					
165579	124	U.S.G.S.	36th & Beltline	S	882	0- 71 QUA 71- 80 PVL 80- 85 GWD 85- 86 STP	0- 74	4	0	2	USGS	1	0 4					
165580	123	U.S.G.S.	36th & Yosemite	S	910	0- 90 QUA 90-100 PVL 100-103 GWD	0- 93	4	0	2	USGS	1	0 4 8					
165581	126	U.S.G.S.	40th and Quentin	S	915	0-103 QUA 103-123 PGW	0-111	4	0	2	USGS	1	0 4					
165582	127	U.S.G.S.	Mrsnside & Brdale	S	880	0- 71 QUA 71- 90 PGW	0- 75	4	0	2	USGS	1	0 4					
165583	128	U.S.G.S.	Justad Park	S	920	0- 67 QUA	0- 63	4	0	2	USGS	1	0 4					
165584	129	U.S.G.S.	3984 Alabama	S	913	0-117 QUA 117-122 STP	0-118	4	0	2	USGS	1	0 4					



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
165585	130	U.S.G.S.	NW Meth. Hosp Lt S		887	0- 80 QUA 80- 85 PVL 85- 86 GWD 86- 88 STP	0- 80 4	0	2	USGS	1	0 4
165586	131	U.S.G.S.	6200 Lake Street S		887	0- 94 QUA 94-107 PVL 107-108 GWD	0- 97 4	0	2	USGS	1	0 4
165587	132	U.S.G.S.	6317 Cambridge S		902	0- 84 QUA 84- 93 PVL	0- 86 4	0	2	USGS	1	0 4
165588	133	U.S.G.S.	36th & Alabama S		917	0-109 QUA 109-122 STP	0-116 4	0	2	USGS	1	0 4 8
165589	134	U.S.G.S.	36th & Alabama S		917	0- 73 QUA	0- 69 4	0	2	USGS	1	0 4
165590	135	U.S.G.S.	39th & Yosemite S		920	0- 80 QUA	0- 76 4	0	2	USGS	1	0 4
165591	136	U.S.G.S.	6200 Lake Street S		916	0- 53 QUA	0- 53 4	0	2	USGS	1	0 4
165592	137	U.S.G.S.	S. of 7, N of Lk S		891	0- 70 QUA 80- 87 PVL 87- 87 GWD	4 0 2	0	2	USGS	1	0 4

NON-RESPONSIVE

200538	Gen. Off. Prod.	4521 Hwy. 7	S 925-7500	915	0- 60 QUA 60- 81 PVL 81- 82 GWD 82- 98 STP	0- 62 4	1	3	FIELD	1	0 2 4 8
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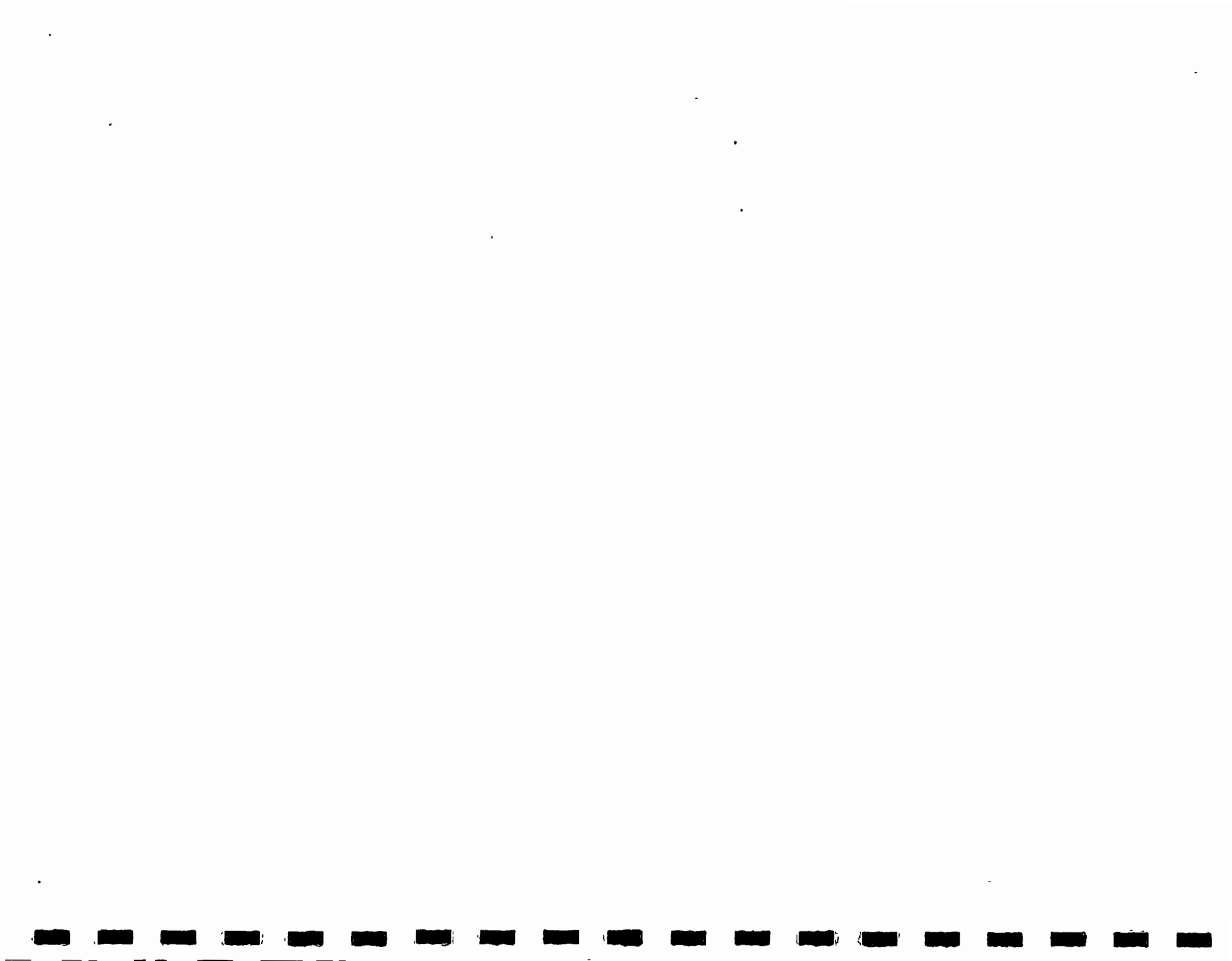
NON-RESPONSIVE

200542	St. Louis Park #4	41st and Natchez S		900	0- 76 QUA 76-106 PVL 106-277 STP 277-398 PDC 398-470 JDN 470-490 STL	0- 89 24 0-304 18	1	1	MGS	1	0 9
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Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE						880	0- 70 QUA 70- 86 PVL	0- 70 4	0	0	USGS	1 01
						905	0-201 QUA 201-244 STP 244-277 PDC	0-232 4	0	0	MGS	1 0
200545		Lady Be Lovely	3903 Sunnyside R E	926-6020	905	0- 86 QUA 86-115 PVL 115-120 GWD 120-284 STP 284-414 PDC 414-497 JDN	0- 87 10 87-151 8 151-333 6	0	0	MGS	1	0
NON-RESPONSIVE						875	0- 56 QUA	0- 52 4	0	0	MGS	1 0
						885	0- 70 QUA 70- 98 PVL	0- 72 4	0	0	MGS	1 0
						885	0- 66 QUA 66- 89 PVL	0- 66 4	0	0	MGS	1 0
						883	0- 71 QUA 71- 90 PVL 90- 93 GWD 93-214 STP 214-328 PDC	0- 73 8 73-228 6	0	0	MGS	1 0
						900	0- 76 QUA 76-109 PVL 109-121 GWD 121-253 STP	0- 76 6 76-2254.5	0	0	MGS	1 0
						925	0-104 QUA 104-136 PVL 136-290 STP	0-104 16	0	3	MGS	1 0 2 9
200979	105	Republic Creosote	Rex Av. & 2nd St S		894	0- 73 QUA 73- 93 PVL 93-260 STP 260-385 PDC 385-504 JDN 504-554 STL 554-813 CUN 813-950 MTS		12	1	3	FIELD	1 01 4
200993	22	Republic Creosote	7200 Walker	S	895	0- 65 QUA 65- 91 PVL 91- 91 STP	0- 71 4	0	3	USGS	1	01 34

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE						890 0- 70 QUA 70- 85 PVL	0- 70	4	0	0	MGS	1 0 7
						880 0- 65 QUA 65- 80 PVL	0- 70	4	0	0	MDH	1 0 2 7
						890 0- 54 QUA 54- 67 PVL		4	0	0	MGS	1 0 7
						915 0-126 QUA 126-276 STP	0-219	5	0	0	MGS	1 0 4
						865 0-170 QUA 170-233 STP 233-236 PDC	0-192	5	0	0	MGS	1 0 4
						875 0- 80 QUA 80-235 STP		5	0	0	MGS	1 0
						885 0-107 QUA	0-107	5	0	0	MGS	1 0 4 7
						890 0-108 QUA 108-246 STP	0-200	5	0	0	MGS	1 0 4
						880 0- 73 QUA 73-247 STP	0-193	4	0	0	MGS	1 0 4
						875 0- 78 QUA 78-243 STP 243-303 PDC	0-194	8	0	0	MGS	1 0 4
						870 0- 94 QUA 94-250 STP 250-292 PDC	0-223	5	0	0	MGS	1 0 4
						895 0- 60 QUA 60- 80 PVL 80- 90 STP	0- 69	4	0	0	MGS	1 0 4
						885 0- 92 QUA 92-167 STP 167-168 PDC	0- 98	8	0	0	MGS	1 0
						885 0- 83 QUA 83- 86 PVL 86-150 STP		4	0	2	OWNER	1 0 2 8
						890 0- 75 QUA 75- 96 PVL 96- 97 STP	0- 77	5	0	0	PHOTO	1 0 4 8
						915 0- 79 QUA 79- 89 PVL		5	0	1	FIELD	1 0 78

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing, Schedule	C	A	Status	Map	Source
NON-RESPONSIVE					940	0-112 QUA 112-127 PVL	0-112 4	0	0	MGS	1	0 9
					935	0-118 QUA 118-130 PVL 130-250 STP 250-420 PDC 420-500 JDN	0-256 16 88-267 12 0-274 10 292-308 8	0	0	MGS	1	0 3
NON-RESPONSIVE					930	0-105 QUA 105-120 PVL 120-134 STP	0-105 4	0	0	MGS	1	0 2
					940	0-115 QUA 115-130 PVL 130-135 GWD 135-146 STP	0-108 6	0	5	MGS	1	0
					915	0- 90 QUA 90-105 PVL 105-110 GWD 110-133 STP	0- 84 4	0	0	MGS	1	0 7 9
					920	0-105 QUA 105-128 PVL 128-294 STP 294-310 PDC 310-495 JDN 495-500 STL	0-310 30 0-425 24	0	1	MGS	1	0 4 9
NON-RESPONSIVE					930	0- 91 QUA 91-105 PVL 105-107 GWD 107-264 STP	0- 91 5 91-233 4	4	0	MGS	1	0 4
					925	0- 95 QUA 95-113 PVL 113-117 STP	4 0 0	0	0	MGS	1	0 9
203190	32	Texatanka	8000 Mtk. Blvd. S		925	0- 98 QUA 98-112 PVL 112-117 GWD 117-283 STP 283-405 PDC 405-466 JDN	0-283 8	0	0	MGS	1	01 9
NON-RESPONSIVE					920	0-102 QUA		0	0	MGS	1	0

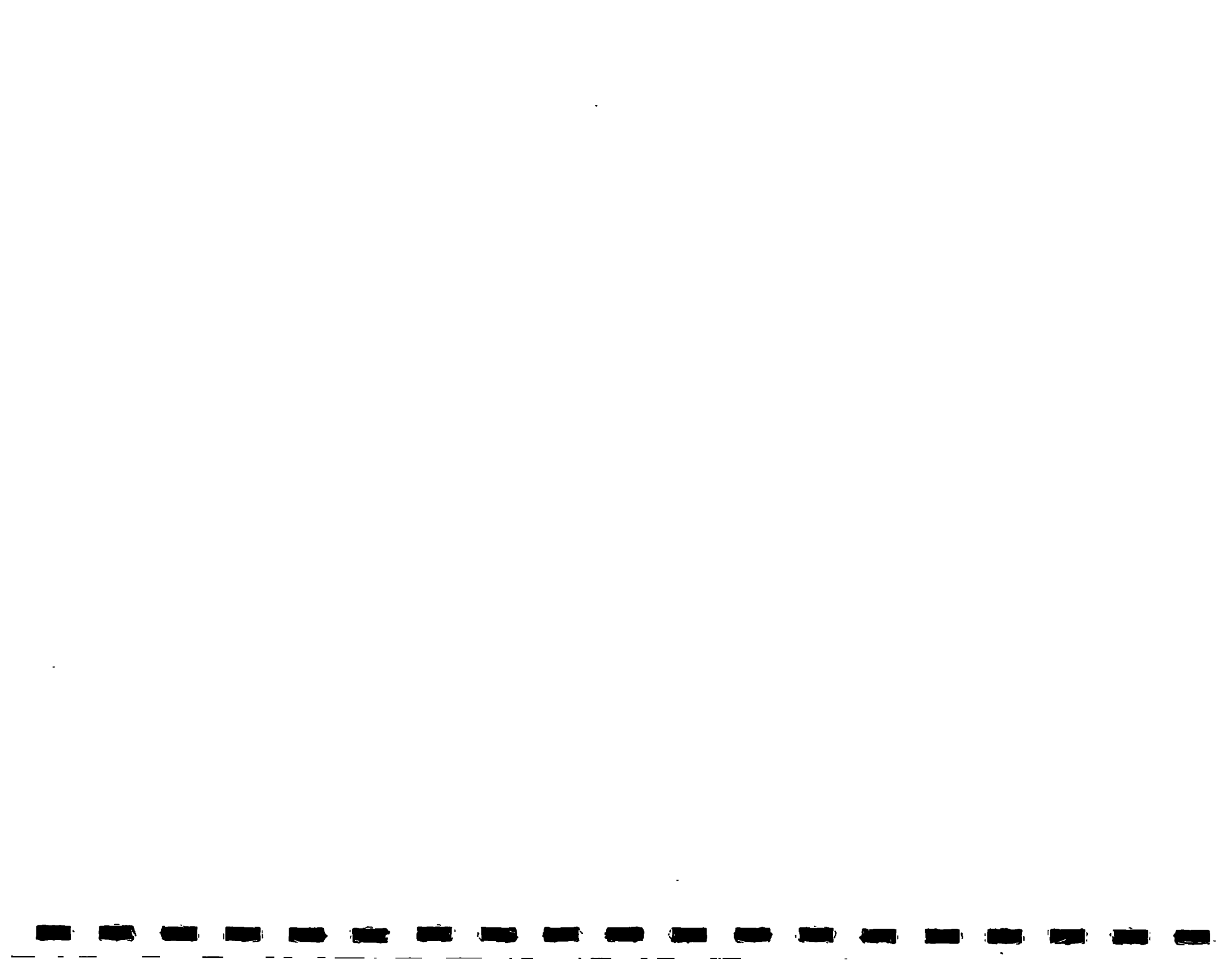


Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE					920	0-100 QUA 100-108 PVL		4	0	0	MGS	1 0 9
203193		Church of Jubilee	9500 Mtka. Blvd. S	938-8614	930	0-105 QUA 105-121 PVL 121-123 GWD	0-105	4	0	0	MGS	1 0
NON-RESPONSIVE					925	0-100 QUA 100-118 PVL 118-119 GWD 119-126 STP	0-103	5	0	0	MGS	1 01 9
					915	0- 79 QUA 79- 94 PVL 94-260 STP		4	0	0	MGS	1 0
					930	0-109 QUA 109-120 PVL 120-132 GWD 132-285 STP 285-407 PDC 407-450 JDN 450-465 STL	0-115 24 0-305 20	0	1	MGS	1 0 2 9	
					915	0- 86 QUA 86-112 PVL	0- 85	4	2	0	MGS	1 0 34
					915	0- 80 QUA 80-110 PVL 110-116 GWD 116-240 STP 240-460 PDC 460-475 JDN		24 20	0	1	MGS	1 0 9
					920	0-117 QUA	0-114	3	0	0	MGS	1 0
					920	0- 81 QUA 81-107 PVL 107-107 STP	0- 80	4	0	0	MGS	1 0 4 9
					925	0- 80 QUA 80- 99 PVL	0- 81	4	0	0	MGS	1 0 34
					925	0- 85 QUA 85-112 PVL 112-136 STP		5	0	0	MGS	1 0 9
					925	0-100 QUA 100-115 PVL 115-120 GWD 120-130 STP		3	0	0	MGS	1 0

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE						910 0-102 QUA		4	0	0	MGS	1 0
						905 0- 91 QUA		5	0	0	MGS	1 0 9
						91-105 PVL						
203607						105-105 STP						
						500 0-244 QUA	0-253	5	0	0	MGS	1 0
						244-301 STP						
NON-RESPONSIVE						301-337 PDC						
						955 0-162 QUA	0-165	4	0	0	MGS	1 01
						162-168 PVL						
NON-RESPONSIVE						945 0-178 QUA			0	0	MGS	1 0
						178-305 STP						
						305-307 PDC						
NON-RESPONSIVE						925 0-136 QUA	0-101	3	0	0	MGS	1 0
						136-140 STP						
						940 0-123 QUA		3	0	0	MGS	1 0
NON-RESPONSIVE						935 0-166	0-166	4	0	0	MGS	1 0
						166-292 STP	0- 88	3				
						935 0-104 QUA	0-109	24	0	0	MGS	1 0 9
NON-RESPONSIVE						104-119 PVL	0-429	16				
						119-123 GWD						
						123-292 STP						
NON-RESPONSIVE						292-412 PDC						
						412-494 JDN						
						494-494 STL						
NON-RESPONSIVE						935 0-109 QUA	0-116	24	0	1	MGS	1 0 4
						109-122 PVL	0-955	16				
						122-126 GWD						
NON-RESPONSIVE						126-295 STP						
						295-409 PDC						
						409-497 JDN						
NON-RESPONSIVE						497-545 STL						
						545-680 FRN						
						680-743 IGL						
NON-RESPONSIVE						743-831 ECR						
						831-079 MTS						
						079-079 PRC						
NON-RESPONSIVE						950 0-147 QUA			0	0	MGS	1 0 4
						147-156 STP						



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
206444	40	Minnesota Rubber	3630 Wooddale Av S	927-1400	915	0-111 QUA 111-276 STP 276-397 PDC 397-475 JDN	0-211 8 184-288 6	0	2	PHOTO	1	01 3 789
206445	45	S & K Products	3520 Xenwood Ave.S		905	0- 92 QUA 92- 94 PVL 94-122 GWD 122-265 STP 265-312 PDC	0-244 6	0	0	MGS	1	0 23 78
NON-RESPONSIVE						895	0- 95 QUA	0- 90 2	0	0	MGS	1 0 4
206448	25	Lakeland Door Co.	3715 Oregon Ave. S	938-2716	895	0- 79 QUA 79- 85 PVL	0- 79 3	0	3	PHOTO	1	0 8
206449	33	Strand Mfg. Co.	3629 Hampshire	S 925-2066	905	0- 80 QUA 80-100 PVL 100-102 GWD 102-182 STP	8 0 3	0	3	PHOTO	1	01 89
206450	49	Strom Block Co.	6425 Goodrich	S	900	0- 72 QUA 72- 92 PVL 92- 96 GWD 96-260 STP 260-381 PDC 381-384 JDN	0- 77 8 0-241 6	0	0	USGS	1	01 4 9
206451	65	Strom Block Co.	6425 Goodrich	S	904	0- 77 QUA 77- 93 PVL 93- 95 GWD 95-109 STP	0- 77 4	0	0	USGS	1	012 4 9
206452		Methodist Hospital	6500 Excelsior	S 932-5000	895	0- 60 QUA 60- 60 PVL	0- 57 16	0	3	USGS	1	0 34
206454	29	Flame Industries	7317 W. Lake	S 929-7815	895	0- 73 QUA 73- 90 PVL 90-251 STP 251-335 PDC	0- 77 10 0-257 8	0	0	USGS	1	0 3 7 9
NON-RESPONSIVE						915	0- 55 QUA 55- 73 PVL	0- 58	0	0	MGS	1 0



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source		
NON-RESPONSIVE						915	0- 96 QUA 96-127 PVL 127-132 GWD 132-303 STP 292-427 PDC 427-515 JDN 515-550 STL 550-695 FRN 695-747 IGL 747-832 ECR 832-095 MTS	0- 99 30 0-270 24	0	1	MGS	1	0	9
						915	0- 90 QUA 90-122 PVL 122-127 GWD 127-290 STP 290-417 PDC 417-480 JDN	0-108 24 0-303 20	0	1	MGS	1	0	9
						895	0- 79 QUA 79- 90 PVL	4	0	0	MGS	1	0	
						900	0- 86 QUA 86-116 PVL 116-120 GWD 120-125 STP	0- 86 4	0	0	MGS	1	0	
						905	0- 73 QUA 73-103 PVL 103-108 GWD 108-130 STP	0- 73 4	0	0	MGS	1	0	
						900	0- 77 QUA	2	0	0	MGS	1	0	
						915	0- 87 QUA 87-107 PVL	0- 87 4	0	0	MDH	1	0 2	
						915	0- 91 QUA 91-110 PVL	0- 93 4	0	0	MDH	1	0 2	
						900	0- 74 QUA 74-103 PVL 103-110 GWD 110-150 STP	0- 75 6	0	0	MGS	1	0	
						895	0- 70 QUA 70- 83 PVL	0- 70 4	0	0	MGS	1	0	



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source			
NON-RESPONSIVE						905	0- 73 QUA 73-101 PVL 101-106 GWD 106-120 STP	0- 73	4	0	0	MGS	1	0	
							0-127 QUA 127-143 PVL	0-120	5	0	0	MGS	1	0	
						928		0-116 QUA 116-143 PVL		5	0	0	MGS	1	0
						917		0- 95 QUA 95-127 PVL	0- 95	5	0	0	MGS	1	0
						927		0-116 QUA 116-121 PVL			0	0	MGS	1	0
						905		0- 89 QUA 89-105 PVL		5	0	0	MGS	1	0
						905		0- 97 QUA 97-101 PVL	0- 97	3	0	0	MGS	1	0
						905		0- 90 QUA 90-105 PVL 105-120 STP	0- 88	5	0	0	MGS	1	0
						895		0-120 QUA 120-280 STP	0-246	4	0	0	MGS	1	0 4
						895		0- 79 QUA 79- 95 STP	0- 79	4	0	0	MGS	1	0
						900		0- 89 QUA 89- 93 PVL 93-233 STP	0-190	4	0	0	MGS	1	0
						920		0-102 QUA 102-110 PVL 110-112 GWD 112-147 STP		6	0	0	MGS	1	0
						915		0-104 QUA 104-125 PVL 125-128 GWD 128-292 STP 292-350 PDC	0-104 0-297	6 4	0	0	MDH	1	0 2
						935		0- 80 QUA 80-100 PVL 100-105 STP	0- 72	5	0	0	MGS	1	0

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE						925 0-116 QUA 116-143 PVL 143-145 GWD 145-152 STP	0-117 4	0	0	MGS	1	0
						895 0- 96 QUA 96-106 PVL 106-108 GWD 108-197 STP	0-179 4	0	0	MGS	1	0
						905 0- 83 QUA 83-103 PVL 103-160 STP	0- 97 5	0	0	MGS	1	0
						895 0-188 QUA 188-250 STP 250-253 PDC	0-207 4	0	0	MGS	1	0
						900 0-210 QUA 210-253 STP	0-218 5	0	0	MGS	1	0 9
						905 0-224 QUA 224-256 STP 256-284 PDC	0-225 4	0	0	MGS	1	0
						0- 89 QUA 89- 91 PVL 91-126 STP	0-105 5	0	0	MGS	1	0
						0- 80 QUA 80-168 STP		0	0	MGS	1	0
						0-101 QUA 101-262 STP	0- 96 6 96-133 4	0	0	MGS	1	0
								0	0	MGS	1	01
						905 0-104 QUA 104-264 STP 264-270 PVC		0	0	MGS	1	0
						905 0-102 QUA 102-256 STP	0-226 4	0	0	MGS	1	0
						895 0- 59 QUA 59- 90 PVL	0- 76 4	2	3	PHOTO	1	01 8
						925 0-102 QUA 102-124 PVL 124-288 STP 288-402 PDC 402-482 JDN 482-503 STL	0-102 30 0-402 24	0	1	MGS	1	0 4 9



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE					890	0- 74 QUA 74- 82 PVL 82- 90 GWD 90-252 STP 252-375 PDC 375-465 JDN 465-502 STL	0- 77 16 0-257 12	0	0	USGS	1	01
NON-RESPONSIVE					216030	1 SLP Monitoring	(3035) Hampshire					
					890	0- 74 QUA 74- 82 PVL 82- 90 GWD 90-252 STP 252-375 PDC 375-465 JDN 465-502 STL	0- 77 16 0-257 12	0	0	USGS	1	01
					216031	2 SLP Monitoring	31st & Oregon S					
					216032	3 SLP Monitoring	33rd & Louisiana S					
					216033	5 SLP Monitoring	Walker Street S					
					216034	6 SLP Monitoring	Walker & Penn S					
					216035	7 SLP Monitoring	35th & Quebec S					
					216036	8 SLP Monitoring	Lake & Taft S					
					216037	9 SLP Monitoring	Lake & R R Track S					
					216038	10 SLP Monitoring	Louisiana Oxford S					
					216039	11 SLP Monitoring	Hampshire S of LkS					
					216040	12 SLP Monitoring	RR, So of 7 S					
					216041	13 SLP Monitoring	Golden Auto Part S					
					216042	14 SLP Monitoring	Hwy. 7 & Lake S					
					216043	15 SLP Monitoring	Walker Street S					
					216044	16 SLP Monitoring	Louisiana/Oxford S					
					216045	17 SLP Monitoring	Hampshire & Lake S					
					216046	18 SLP Monitoring	Lake & Monitor S					
					216047	19 SLP Monitoring	Lake & Taft S					
					216048	20 SLP Monitoring	Near 6725 Oxford S					
					216049	21 SLP Monitoring	Oxford/Louisiana S					



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
*3 216050	23	Republic Creosote	Louisiana, Walker S		897	0- 65 QUA 65- 82 PVL 82- 90 GWD 90-250 STP 250-370 PDC 370-465 JDN 465-499 STL 499-639 FRN 639-700 IGL 700-840 ECR 840-909 MTS	0- 69 12 88-261 10 0-253 8 266-380 7	0	3	PHOTO	1	1 9
216051	143	Century Design	6425 Oxford	S 920-3601		0- 70 QUA 70- 90 PVL	0-70 4	3	3	USGS	1	1 3 8
216052	27	Terry Bros., Inc.	3320 Republic A.	S 929-2626	905	0- 80 QUA 80-100 PVL 100-112 STP	0- 81 4	2	0	USGS	1	01
NON-RESPONSIVE												
216056	34	Sterilized Diaper	3455 Dakota Ave.	S 920-8730	915	0- 93 QUA 93-107 PVL 107-113 GWD 113-280 STP 280-342 PDC	93-291 8 0-292 6	0	0	USGS	1	01 34 9
*6 216057	35	Belco Elevator	5705 W. 35th St	S 922-0247	912			6	0	2	PHOTO	1 12 8
NON-RESPONSIVE												
216060	38	D.A. Lubricants	3565 Wooddale	S 920-2880	914	0-111 QUA 111-260 STP 260-405 PDC 405-515 JDN 515-670 SLF 670-750 IGL 750-815 ECR 815-002 MTS	5-111 12	0	5	USGS	1	01 3 9
NON-RESPONSIVE												
					910			0	0	USGS	1	1
					912	160 STP	2	1	3	PHOTO	1	1 8
					912	60		0	3	USGS	1	1 8



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
216064			37th & Colorado	S				2	0	USGS	1	1
216065	46	S-K Products	3520 Xenwood	S 929-0484	905	0- 92 QUA 92- 94 PVL 94-122 GWD 122-265 STP 265-312 PDC	0-234 6	0	0	USGS	1	1 3 8
216066	47	Belco Elevator	5750 W 35th	S 922-0247	891	JDN		8	0	0	USGS	1 1
216067	48	Methodist Hospital	6500 Excelsior	S 932-5000	890	0- 85 QUA 85- 94 PVL 94-257 STP 257-377 PDC 377-466 JDN 466-485 STL	0-255 20	0	0	USGS	1	1 4
216068	50	Prestolite Wire	220 W. 98th St.	S 888-6531	890				0	5	USGS	1 1
216069	51	Androc Chemical Co	7301 Lake St.	S	892			4	0	5	USGS	1 1
216070	52	Suburban Sanitary	Meadowbrk & Min.	S	920	0- 81 QUA 81- 95 PVL 95- 97 GWD 97-110 STP	0- 82 4	0	0	USGS	1	01 4
216071	53	Northland Aluminum	3245 Raleigh	S 920-2888	884				0	0	USGS	1 1 3
216072	54	Old Galachirche R.		H	920			6	2	0	USGS	1 1
NON-RESPONSIVE								4	0	3	OWNER	1 012 4 89
NON-RESPONSIVE												
NON-RESPONSIVE								4	0	0	USGS	1 1
NON-RESPONSIVE									0	0	USGS	1 1
NON-RESPONSIVE								2	0	USGS	1 1 3	
216077	59	Rep. Creosote site E. of Louisiana		S		24	0- 15 6	0	5	USGS	1	1
216078	60	Professional Bldg.	3645 Rhode Is.	S 938-7628	935	250		5	0	5	MDH	1 12 8
NON-RESPONSIVE									2	0	USGS	1 1
216080	65	National Foods	1515 Excelsior	H	910	285		12	0	0	USGS	1 1 9
216081	66	Blacktop Service	Camb. & M'haha Cr	S	899	0- 86 QUA 86- 87 GWD 87-251 STP 251-280 PDC	0-212 6	0	3	USGS	1	01 4
216082	67	Blacktop Service	Camb. & M'haha Cr	S	912	0- 84 QUA 84- 85 GWD 85-105 STP	0- 84 3	0	3	USGS	1	01 4



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source	
216083	69	Hedberg-Friedheim	Wolf Lake	S	890	0- 71 QUA 71- 78 PVL 78- 81 GWD 81-246 STP 246-327 PDC 348		3	3	USGS	1	0 3	
						230		2	5	USGS	1	1 3	
						925		0	0	USGS	1	0	
216086	73	Poppin Fresh	220 Blake Rd.	H 935-0171	915	138-153 STP 0- 87 QUA 87-114 PVL 114-120 GWD 120-144 STP	0- 90	6	0	0	USGS	1	01 4
216087	74	Landers Gravel Co.	27th & Louisiana	S	890	0- 82 QUA 82-100 PVL 100-265 STP 265-280 PDC	12	0	0	USGS	1	1 3 9	
						905		0	3	USGS	1	1	
216089	75	Park Pet Hospital	4925 Hwy. 7	S 926-2703	884	80- 89 PVL 89-245 STP 245-370 PDC 370-485 JDN 485-487 STL 0- 67 QUA 67- PVL -130 STP	0- 67	6	1	3	PHOTO	1	1 3 78
216090	76	Professional Inst.	4601 Hwy. 7	S 927-4494	882	0-184	6	4	2	PHOTO	1	1 3 78	
								0	2	PHOTO	1	1 8	
								2	4	USGS	3	1	
216102	104	Rice Gravel & Sand		S		250	12	0	0	USGS	1	1	
216103	106	Hedberg-Friedheim		S	900	0- 90 QUA 90-100 PVL 100-230 STP		0	3	USGS	1	1	
★ 216104	107	Interior Elevator	Salem & RR Track	S	875	0- 75 QUA 75-100 PVL 100-250 STP 250-390 PDC 390-495 JDN 495-710 SLF 710-755 IGL		0	0	USGS	1	1	



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
216105	109	Max Renner's Shop		S	925	0- 93 QUA 93-113 PVL 113-118 STP		2	0	USGS	1	1
NON-RESPONSIVE								2	0	USGS	1	1
					919	0-190 QUA 190-240 STP		0	0	USGS	1	12 8
216108	114	Hedberg-Friedheim		S	887	0- 60 QUA 60- 80 PVL 80-249 STP		0	0	USGS	1	1
216109	115	USGS	Louisiana Circle	S	892	0- 65 QUA 65- 78 PVL 78- 78 GWD	0- 66 4	0	2	USGS	1	1
★ 216128	144	Interior Elevator		S				0	0	USGS	1	1
NON-RESPONSIVE								4	1	0	USGS	1 1
216102		Echo Plastics	6514 Cambridge	S	895	0- 70 QUA 70- 85 PGW 85-190 STP	0- 76 6	0	0	MGS	1	0 3
NON-RESPONSIVE												
					900	0- 82 QUA 82- 95 PVL	0- 82 3	0	0	MGS	1	0
					896	0- 80 QUA 80- 90 PVL	0- 80 3	0	0	MGS	1	0
					899	0- 85 QUA 85- 92 PVL 92- 97 GWD	0- 85 3	0	0	MGS	1	0
					905	0- 93 QUA 93- 99 PVL	0- 93 3	0	0	MGS	1	0
					909	0- 90 QUA 90-100 PVL	0- 95 3	0	0	MGS	1	0
					913	0- 94 QUA 94-101 PVL	0- 94 3	0	0	MGS	1	0
					897	0- 80 QUA 80- 92 PVL	0- 80 3	0	0	MGS	1	0
					897	0- 82 QUA 82- 94 PVL	0- 82 3	0	0	MGS	1	0
					900	0- 83 QUA 83- 95 PVL	0- 84 3	0	0	MGS	1	0
					900	0- 88 QUA 88- 99 PVL	0- 88 3	0	0	MGS	1	0



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE						911 0- 90 QUA	0- 90 3 0 0	MGS	1	0		
						90-101 PVL						
						912 0- 92 QUA	0- 92 3 0 0	MGS	1	0		
						92- 99 PVL						
						916 0- 90 QUA	0- 90 3 0 0	MGS	1	0		
						90- 98 PVL						
						916 0- 97 QUA	0- 97 3 0 0	MGS	1	0		
						97-105 PVL						
						920 0-106 QUA	0-106 3 0 0	MGS	1	0		
						106-117 PVL						
						924 0-107 QUA	0-108 3 0 0	MGS	1	0		
						107-118 PVL						
						923 0-104 QUA	0-105 3 0 0	MGS	1	0		
						104-115 PVL						
						923 0-104 QUA	0-108 3 0 0	MGS	1	0		
						104-124 PVL						
						927 0-112 QUA	0-113 3 0 0	MGS	1	0		
						112-125 PVL						
						925 0-115 QUA	3 0 0	MGS	1	0		
						115-128 PVL						
						926 0-110 QUA	0-110 3 0 0	MGS	1	0		
						927 0-105 QUA	0-109 3 0 0	MGS	1	0		
						105-121 PVL						
						927 0-114 QUA	0-117 3 0 0	MGS	1	0		
						114-121 PVL						
						910 0- 97 QUA	0- 98 4 0 0	MGS	1	0		
						97-108 PVL						
222944	Allied Gas Co.	3501 Webster	S		905	108-170 STP						
						0-100 QUA	0-100 4 0 3	MDH	1	0 2 4		
						100-105 PVL						
						105-107 GWD						
						107-119 STP						
NON-RESPONSIVE						5 953 0-145 QUA	0-260 4 0 0	MGS	1	0		
						145-298 STP						
						5 919 0-122 QUA	0-122 4 0 0	MGS	1	0		
						2 892 0-188 QUA	0-188 3 0 0	MGS	1	0 4		
						188-203 STP						



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE					886	0- 51 QUA	0- 45 3	2	0	MGS	1	0
					884	0- 68 QUA	0-205 4	0	0	MGS	1	0 4
						68- 72 PVL						
						72-255 STP						
					920	0-101 QUA	0-101 4	0	0	MGS	1	0
						101-121 PVL						
					920	0- 50 QUA		4	0	0	MGS	1 0 4
					919	0-104 QUA	0-98 4	0	0	MGS	1	0 34
						104-122 PVL						
					925	0-107 QUA	0-107 4	0	0	MGS	1	0
					928	0-104 QUA	0-104 3	0	0	MGS	1	0
						104-120 PVL						
						120-123 GWD						
					930	0-189 QUA	0-182 4	2	0	MGS	1	0
					948	0-107 QUA	0-101 4	0	0	MGS	1	0 4
						107-134 PVL						
					905	0-105 QUA	0-110 12	0	0	MGS	1	0 3
						105-113 PVL	0-258 10					
						113-258 STP						
						258-387 PDC						
						387-485 JDN						
								2	0		1	1
						STP		2	0	USGS	1	1
								2	0	USGS	1	1
								2	0	USGS	1	1
					906	0- 94 QUA	0- 94 30	0	1	MGS	1	0 9
						94- 98 PVL	0-253 24					
						98-265 STP	0-389 16					
						265-375 PDC						
						375-475 JDN						
						475-485 STL						
						80		2	0	1	PHOTO	2 78
								0	4	NONE	3	7
								0	4	NONE	3	7
								0	0	NONE	2	9
								0	4	NONE	3	3 7
						100		2	3	NONE	2	2 7
								0	4	NONE	3	7





Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
232537		VanAlstine, C.	3040 Ensign	S				0	4	NONE	3	8
NON-RESPONSIVE												8
232539		Warner Hardware	5025 Excelsior	S 927-9701				0	4	NONE	3	7
NON-RESPONSIVE												7
232541		Woodgate Dtc. Bldg	5407 Excelsior	S				0	4	NONE	3	7
232542		Fanny Farmer #132	5401 Excelsior	S 929-2284				0	4	NONE	3	7
232543		Brent Displays	5807 Excelsior	S 920-4664				0	4	NONE	3	7
NON-RESPONSIVE												7
232547		Seigelbaum, Stanley	1611 Fairway Ln.	S 545-2675		90		4	0	1 MDH	2	7
232548		Copper Sales, Inc.	2220 Florida Ave	S 545-1604				0	4	NONE	3	7
NON-RESPONSIVE												7
232550		Kennedy Equipment	3813 Kipling	S 926-4031				0	3	OWNER	2	8
232551			Ford Road	S				0	4	NONE	3	7
NON-RESPONSIVE												7
NON-RESPONSIVE												7
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Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source		
★ 9	232604		2905 Louisiana	S				0	4	NONE	3	7		
★	232605	Preston, Geo.	2918 Louisiana	S 929-7932				0	3	NONE	2	78		
★	232606		2924 Louisiana	S				2	4	NONE	3	7		
★	232607		Next to 2924 L.	S				2	4	NONE	3	7		
NON-RESPONSIVE						PVL	2	0	0	MDH	3	2		
									0	3	OWNER	2	8	
						80			0	4	NONE	3	3	
									0	2	PHOTO	2	3	8
									0	3	NONE	2	8	
						0- 71 QUA	0- 71	6	0	0	NONE	2	4	
						71- 83 PVL								
						83- 86 GWD								
						86-200 STP								
						340			0	0	NONE	2	4	
★	232614	DayStar Ministries	4500 Mtka. Blvd.	S 920-1317				0	4	NONE	3	7		
★	232615	Standard Plumbing	8015 Mtka. Blvd.	S 938-3589				0	3	NONE	2	8		
NON-RESPONSIVE						0-107 QUA	0-107	4	0	0	NONE	2	4	
									0	3	NONE	2	78	
									0	3	OWNER	2	8	
									2	4	NONE	3	7	
									0	4	NONE	3	7	
									0	4	NONE	3	3	
						86		3	0	2	PHOTO	2	78	
									0	4	NONE	3	7	
						0- 80 QUA	0- 80	8	0	5	NONE	2	3	
						80-150								
						105		3	0	1	PHOTO	2	2	78
						78		3	0	1	PHOTO	2	23	78
									0	4	NONE	3	7	
									0	3	OWNER	2	78	
									0	3	MDH	2	2	8
						243		4	2	0	NONE	2	3	
									0	2	OWNER	2	8	
									0	3	OWNER	2	8	
						200		4	0	1	PHOTO	2	2	78
						0-199 QUA	0-193	5	0	0	NONE	2	4	
						199-211 PVL								
						211-236 STP								
									0	4	NONE	3	7	



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE						0- 86 QUA 86- 99 PVL 99-103 GWD 103-109 STP	0- 81 4	0	0	NONE	2	4
								0	4	NONE	3	7
								0	4	NONE	3	7
						0- 88 QUA	0- 82 3	0	0	NONE	2	4
								0	3	OWNER	2	8
								0	3	OWNER	2	8
						119		0	3	OWNER	2	8
						0-140 QUA 140-158 PVL 158-160 STP	0-140 4	2	3	NONE	2	4 8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
232647		Mork Central Off.	6009 Wayzata Bl. S			0- 56 QUA 56- 66 PVL	0- 57 4	0	0	NONE	2	34
232648		Prestige Lincoln	6629 Wayzata Bl. S	544-6661				0	4	NONE	3	3
232649		Baker Properties	7075 Wayzata Bl. S					2	4	NONE	3	3
NON-RESPONSIVE								0	3	OWNER	2	8
								0	4	NONE	3	7
								0	4	NONE	3	7
								0	3	MDH	2	2 8
								0	4	NONE	3	7
								2	4	NONE	3	7
								0	3	NONE	2	8
						0- 89 QUA 89-100 PVL 100-103 STP	0- 90 5	0	0	NONE	2	4
								0	3	OWNER	2	8
						0- 71 QUA	0- 71 2	0	0	NONE	2	4
232659		Interlachen Park						2	4	NONE	3	7
NON-RESPONSIVE								2	4	NONE	3	7
						70		1	3	OWNER	2	78
								0	4	NONE	3	8
						90 PVL		0	1	MDH	2	2 7
								0	4	NONE	3	7
						0- 90 QUA 90-125 PVL	0- 90 5	0	0	NONE	2	4 7
232666		Westwood Golf Cour	20th & Texas	S								

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source		
NON-RESPONSIVE						0- 85 QUA 85-104 PVL	0- 82	4	0	0	NONE	2	4	
									0	3	MDH	2	2	7
									0	4	NONE	3	3	
									0	4	NONE	3		7
									2	4	NONE	3		7
									0	4	NONE	3		7
									0	4	NONE	3		7
						120		4	1	0	NONE	2	34	
									0	4	NONE	3		7
						0-115 QUA 115-117 PVL	0-110	4	0	0	NONE	2	4	
NON-RESPONSIVE						0-115 QUA 115-298 STP 175	0-238	4	0	0	OWNER NONE	2	4	8
									0	4	NONE	3	3	
									0	3	OWNER	2		8
									0	4	NONE	3	3	
						JDN		4.5	0	3	OWNER	2	4	8
								3						
								2						
									0	4	NONE	3		7
									0	3	NONE	2		8
									0	3	OWNER	2		8
NON-RESPONSIVE						40			0	3	MDH	2	2	
								2	0	3	PHOTO	2	2	8
									0	3	PIOTO	2	2	8
								4	0	3	MDH	2	2	
								6	0	3	MDH	2	2	
									0	1	MDH	2	2	
									0	3	MDH	2	2	
								4	0	3	MDH	2	2	
								1	0	2	PHOTO	2	2	8
						105		2	0	3	MDH	2	2	
						108		4	0	1	MDH	2	2	
						75			0	1	MDH	2	2	
									0	3	MDH	2	2	
								4	0	1	MDH	2	2	
									0	3	FIELD	2	2	8



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE						90		0	1	MDH	2	2 7
						100		0	1	PHOTO	2	2 8
								2	0	3	PHOTO	2 2 8
									0	3	MDH	2 2
						274		0	1	MDH	2	23
								12	2	3	MDH	2 2
									0	4	NONE	3 3
									0	4	NONE	3 3
									0	4	NONE	3 3
									0	4	NONE	3 3
									0	4	NONE	3 3
									0	4	NONE	3 3
									0	4	NONE	3 3
						0- 98 QUA	0- 98	4	0	0	NONE	2 34
									0	4	NONE	3 3
									0	4	NONE	3 3
						0- 81 QUA	0- 81	3.5	0	0	NONE	2 4
						81- 99 PVL						
						99-111 STP						
									0	4	NONE	3 3
									0	4	NONE	3 3
NON-RESPONSIVE									2	4	NONE	3 3
									0	4	NONE	3 3
									0	4	NONE	3 3
									0	4	NONE	3 3
									0	4	NONE	3 3
						0- 84 QUA	0- 84	4	0	0	NONE	2 4
						84- 96 PVL	84-210	3				
						96-100 GWD						
						100-244 STP						
						800			1	3	OWNER	2 8
						68			3	1	3	NONE 2 23
						0- 73 QUA	0- 73	3	0	0	NONE	2 34
						73- 94 PVL						
						0- 77 QUA	0- 74	4	2	0	NONE	2 4
						77- 95 PVL						
NON-RESPONSIVE												



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source	
NON-RESPONSIVE						0- 77 QUA	0- 72	4	0	0	NONE	2	4
						77- 93 PVL							
						0- 72 QUA	0- 72	4	0	0	NONE	2	4
						72- 91 PVL							
						0- 82 QUA	0- 76	4	1	0	NONE	2	34
						82- 94 PVL							
						0- 86 QUA	0- 82	4	0	0	NONE	2	4
						86-106 PVL							
						0- 85 QUA	0- 85		0	0	NONE	2	34
						85-106 PVL							
									0	4	NONE	3	3
									0	4	NONE	3	3
						18		2	1	3	OWNER	2	8
									0	3	OWNER	2	8
								4	0	3	PHOTO	2	8
						130			1	3	OWNER	2	8
									0	3	OWNER	2	8
									0	3	OWNER	2	8
									0	3	OWNER	2	8
									0	3	OWNER	2	8
									0	3	OWNER	2	8
									1	3	OWNER	2	8
									1	3	OWNER	2	8
									0	1	OWNER	2	8
									0	2	OWNER	2	8
						PVL		-2	0	0	MDH	2	2
									0	3	OWNER	2	8
									0	3	OWNER	2	8
									0	3	NONE	2	8
									2	3	NONE	2	8
						130			0	0	MDH	2	2
						90		2	0	3	OWNER	2	8
									2	3	OWNER	2	8
									0	3	OWNER	2	8
									4	3	OWNER	3	8
									2	3	OWNER	2	8
									0	3	OWNER	2	8
									0	3	OWNER	2	8

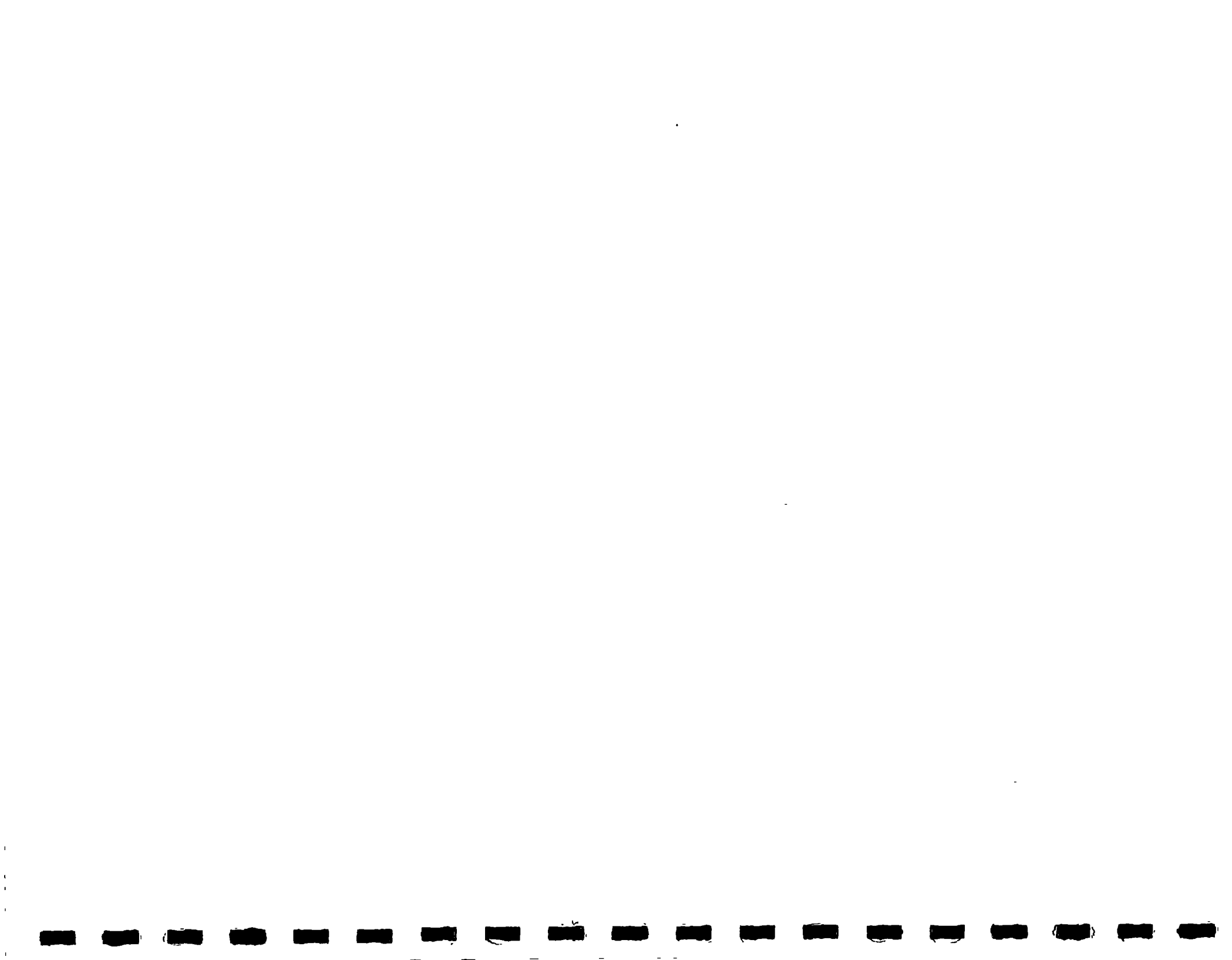


Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE						120		0	3	OWNER	2	8
								0	3	OWNER	2	2 8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								2	4	OWNER	3	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
						20		0	3	OWNER	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								2	0	2 PHOTO	2	8
								0	3	OWNER	2	8
								0	3	OWNER	2	8
								2	3	OWNER	2	8
								0	3	FIELD	2	8
						100		4	0	3 FIELD	2	8
								0	3	FIELD	2	8
								0	3	FIELD	2	8
						110		6	0	3 FIELD	2	2 8
								8	4	3 PHOTO	2	8
								2	0	3 PHOTO	2	8
								0	2	PHOTO	2	8
						60		4	2	PHOTO	2	2 8
								2	0	3 PHOTO	2	8
								2	0	3 PHOTO	2	8
								2	4	3 PHOTO	2	8
								0	3	PHOTO	2	8
								2	0	3 PHOTO	2	8
								2	0	2 PHOTO	2	8

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source						
232810		Ace Mfg. Inc.	3825 Edgewood	S 929-1618				5	0	3	PHOTO	2	8					
NON-RESPONSIVE						70		0	3	PHOTO	2	8						
								2	0	3	PHOTO	2	8					
								3	0	3	PHOTO	2	8					
								0	2	PHOTO	2	8						
								0	3	PHOTO	2	8						
								4	0	3	PHOTO	2	8					
								0	3	PHOTO	2	8						
								0	2	PHOTO	2	8						
						116		4	0	1	PHOTO	2	78					
						80		4	4	1	PHOTO	2	2	8				
						100		2	4	2	PHOTO	2	8					
								3	0	3	PHOTO	2	8					
								0	2	PHOTO	2	8						
						232825		Managed Serv. Inc.	6500 Oxford	S 925-4111				0	0	MDH	2	2
						NON-RESPONSIVE								0	2	PHOTO	2	8
		2	0	3	PHOTO							2	8					
		4	0	3	PHOTO							2	8					
100		0	0	MDH	2							2						
		0	3	PHOTO	2							8						
150		0	0	MDH	2							2						
77		2	0	3	PHOTO							2	8					
		3	0	3	PHOTO							2	8					
100		0	2	PHOTO	2							2						
103		0	3	PHOTO	2							2						
		0	3	FIELD	2							8						
90		2	0	2	PHOTO							2	8					
		0	3	FIELD	2							8						
150		1	3	FIELD	2							8						
		0	3	FIELD	2							8						
		2	0	3	FIELD							2	8					
100		2	1	2	PHOTO							2	2					
210		2.5	0	2	FIELD							2	8					
		0	3	OWNER	2							8						
140		0	3	PHOTO	2							8						
		2	0	3	PHOTO							2	8					
		2	0	3	PHOTO	2	8											
		3	0	3	PHOTO	2	8											



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source			
NON-RESPONSIVE					100			2	1	2	PHOTO	2	8		
								2	0	3	PHOTO	2	8		
								3	0	3	PHOTO	2	8		
									0	3	PHOTO	2	8		
					156			4	1	3	PHOTO	2	8		
					115				0	0	MDH	2	2		
					175				0	0	MDH	2	2		
									0	3	PHOTO	2	8		
					75				0	0	MDH	2	2		
					106				2	0	MDH	2	2		
									0	3	PHOTO	2	8		
					86				0	3	FIELD	2	8		
									0	3	FIELD	2	8		
									1	4	OWNER	3	8		
									0	3	FIELD	2	8		
									0	3	FIELD	2	8		
									0	3	FIELD	2	8		
									0	3	PHOTO	2	8		
									0	3	PHOTO	2	8		
									0	3	PHOTO	2	8		
									2	0	3	PHOTO	2	8	
					80				2	1	2	PHOTO	2	2	
					18					0	3	PHOTO	2	8	
					100					2	1	3	PHOTO	2	8
										0	3	PHOTO	2	8	
					50					0	3	PHOTO	2	2	
					100					2	0	MDH	2	2	
										0	3	PHOTO	2	8	
										2	0	3	PHOTO	2	8
										0	3	PHOTO	2	8	
					95					2	0	MDH	2	2	
										0	2	PHOTO	2	8	
										0	3	PHOTO	2	8	
					100					0	0	MDH	2	2	
					100					0	3	PHOTO	2	8	
										0	3	PHOTO	2	8	
					90					1	1	PHOTO	2	78	
										0	0	MDH	2	2	



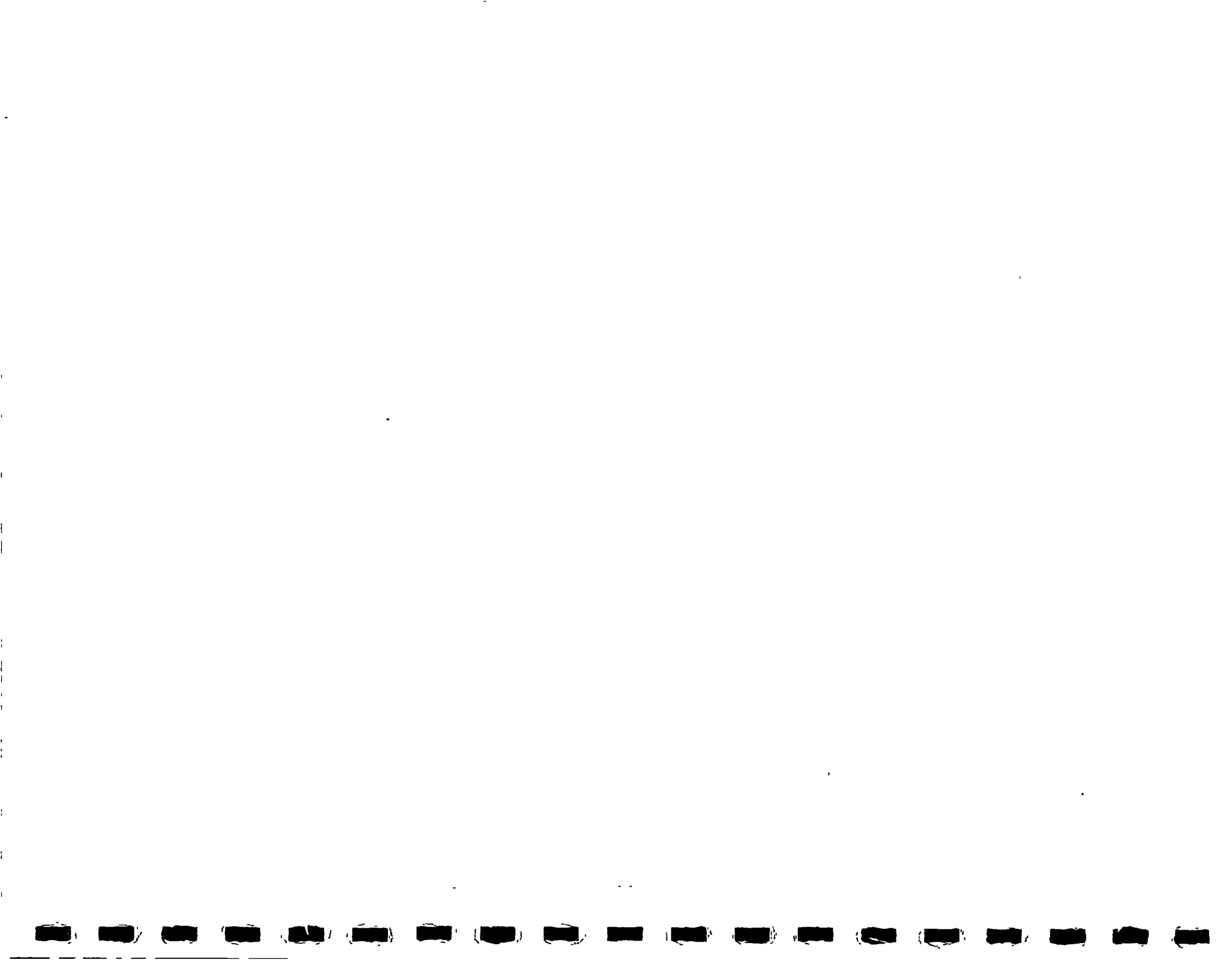
Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source		
NON-RESPONSIVE								2	0	3	PHOTO	2	8	
								4	0	3	PHOTO	2	8	
									0	3	FIELD	2	8	
									0	3	FIELD	2	8	
									2	3	NONE	3	8	
						25			2	0	MDH	2	2	8
								2	0	3	FIELD	2	8	
								2	0	3	FIELD	2	8	
						84		2	0	3	OWNER	2	2	8
									0	3	OWNER	2	8	
									0	3	OWNER	2	8	
								2	0	3	PHOTO	2	8	
									0	3	PHOTO	2	8	
						30			0	0	MDH	2	2	8
									0	3	FIELD	2	8	
						30			0	0	MDH	2	2	8
								2	0	3	PHOTO	2	8	
								1.5	0	3	PHOTO	2	8	
								2.5	0	3	PHOTO	2	8	
								1.5	0	3	PHOTO	2	8	
						150			1	3	PHOTO	2	8	
								2	0	3	PHOTO	2	8	
								2	0	3	PHOTO	2	8	
								5	0	3	PHOTO	2	8	
								2.5	0	3	PHOTO	2	2	8
									0	3	OWNER	2	2	8
									0	3	PHOTO	2	8	
								2	0	3	PHOTO	2	8	
								2.5	0	3	PHOTO	2	8	
								1.5	0	3	PHOTO	2	8	
						50		1.5	0	3	PHOTO	2	8	
								1.5	0	4	PHOTO	3	8	
									0	2	PHOTO	2	8	
						25		1	0	3	PHOTO	2	8	
						96			0	0	MDH	2	2	8
						60			0	0	MDH	2	2	8
								4	0	3	PHOTO	2	8	
								1.5	0	3	PHOTO	2	8	



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE						80		1	3	PHOTO	2	8
								2	0	3	PHOTO	8
									0	3	PHOTO	8
									0	2	PHOTO	8
						140		0	0	MDH	2	2
						100		0	0	MDH	2	2
						100		0	0	MDH	2	2
						100		0	0	MDH	2	8
						28		0	0	MDH	2	2
						100		0	0	MDH	2	2
								0	4	NONE	3	8
						170		0	0	MDH	2	2
						150		0	0	MDH	2	2
						175		0	0	MDH	2	2
						100		2	0	MDH	2	2
232955	Acme Tuckpointing	8724 W. 35th	S 933-2414					0	0	MDH	2	2
NON-RESPONSIVE						75		0	0	MDH	2	2
						100		0	0	MDH	2	2
						80		0	0	MDH	2	2
						60		0	0	MDH	2	2
						45		0	0	MDH	2	8
						25		0	0	MDH	2	2
						25		2	0	MDH	2	2
								0	0	MDH	2	2
						80		0	0	MDH	2	2
						100		0	0	MDH	2	2
						100		0	0	MDH	2	2
						70		0	0	MDH	2	2
								0	0	MDH	2	2
						50		0	0	MDH	2	2
						120		0	0	MDH	2	2
						36		2	0	MDH	2	2
880	0- 69	QUA						2	3	NONE	2	9
	69- 75	PVL										
	75- 76	STP										

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE												
					890	446 STL 480 JDN 0- 74 QUA	0- 68 3	0 0 2 0 2 0 2 0 0 3 0 4 0 3 0 0	0 0 0 0 3 4 3 0	MDH MDH MDH MDH OWNER NONE OWNER NONE	2 2 2 2 2 3 2 2	2 2 2 2    2 8 8 8 9 8 8 8
						125 150 140 150		0 0 0 0 0 0 0 0	0 0 0 0	MDH MDH MDH MDH	2 2 2 2	2 2 2 2
						0- 85 QUA 90	0- 80 3	2 3 2 0 2 0 0 0 0 0 0 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0				

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source	
NON-RESPONSIVE								0	3	NONE	2	8	
								0	3	NONE	2	8	
								0	3	NONE	2	8	
								0	3	NONE	2	8	
								0	0	NONE	2	8	
								0	4	NONE	3	8	
								0	4	NONE	3	8	
								0	0	NONE	2	8	
								0	3	NONE	2	8	
								0	4	NONE	3	8	
								0	4	NONE	3	8	
								0	4	NONE	3	8	
								2	4	NONE	3	8	
								2	4	NONE	3	8	
								2	4	NONE	3	3 7	
								0	3	NONE	2	8	
								0	4	NONE	3	8	
								0	4	NONE	3	8	
								0	4	NONE	3	8	
								40	1	3	NONE	2	8
								0	3	NONE	2	8	
								0	4	NONE	3	8	
								60	0	3	NONE	2	8
								0	4	NONE	3	8	
								0	3	NONE	2	8	
								0	4	NONE	3	8	
								0	3	NONE	2	8	
								0	4	NONE	3	8	
								0	4	NONE	3	8	
								0	4	NONE	3	8	
								0	3	NONE	2	8	
								0	4	NONE	3	8	
								0	3	NONE	2	8	
								0	3	NONE	2	8	
0	3	NONE	2	8									
0	4	NONE	3	7									
0	4	NONE	3	8									



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE								0	3	NONE	2	8
								0	3	NONE	2	8
								0	4	NONE	3	8
								0	4	NONE	3	8
								0	4	NONE	3	8
								0	4	NONE	3	8
								0	4	NONE	3	8
								0	4	NONE	3	8
								0	3	NONE	2	8
								0	4	NONE	3	8
								0	4	NONE	3	8
								0	3	NONE	2	8
								0	3	NONE	2	8
								0	4	NONE	3	8
								0	3	NONE	2	8
								0	3	NONE	2	8
								0	4	NONE	3	8
								0	4	NONE	3	8
								0	4	NONE	3	8
								0	3	NONE	2	8
								0	3	NONE	2	8
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216166 27 117-21-21B8BC 104A 902 OT 51

Y P-112

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216167	27	117-21-21BADB	104A	915	OT	213	OSTP	114	OSTP	OSTP					Y		P-113
216168	27	117-21-21BADB	104A	915	OT	55									Y		P-114
216169	27	28-24- 6CADC	104A	885	OT	92	OSTP	69	OPVL	OSTP					Y		P-116
216170	27	28-24- 6CADC	104A	885	OT	33									Y		P-117
216171	27	117-21-17DDBC	104A	897	OT	88	OPVL	65	OPVL	OPVL					Y		P-118
216172	27	117-21-17DDBC	104A	896	OT	45									Y		P-119
216173	27	117-21-17DDBC	104A	896	OT	62									Y		P-120
216174	27	117-21-17DCBD	104A	890	TW	83		64	OPVL						Y		P-121
216175	27	117-21-17DCBD	104A	890	OT	36	QWTA			QWTA					Y		P-122
216176	27	117-21-17DCBD	104A	889	OT	24	QWTA			QWTA					Y		P-123
216177	27	117-21-17DCBD	104A	889	OT	61	QBAA			QBAA					Y		P-124
216193	27	117-21-20AABB	104A	892	OT	13									Y		P-110
216194	27	117-21-20AABB	104A	892	OT	44									Y		P-109
216195	27	117-21-17BACB	104A	897	OT	70									Y		P-106
216196	27	117-21-17BACB	104B	895	OT	61									Y		P-105
216197	27	117-21-17BACB	104B	895	OT	39									Y		P-104
216198	27	117-21-17BACB	104B	896	OT	94		73	OPVL						Y		P-103
216199	27	117-21-16CCAD	104A	917	OT	111	QBAA	108	OGWD	QBAA					Y		P-102
216200	27	117-21-17CBDD	104B	924	OT	103	OPVL	98	OPVL	OPVL					Y		P-101
218162	27	117-21-20AAAC	104A	895	IN	190	MTPL	70	OPGW	OSTP				865 1966	Y		ECHO P
218163	27	117-21-28BADC	104A	900		95	OPVL	82	OPVL	OPVL				850 1961	Y		HORACE
218164	27	117-21-28BACB	104A	896	DO	90	OPVL	80	OPVL	OPVL				856 1960	Y		HACY
218165	27	117-21-28BCBA	104A	899	DO	99	MTPL	85	OPVL	OGWD				849 1960	Y		
218166	27	117-21-28BCBA	104A	905	DO	99	OPVL	93	OPVL	OPVL				855 1959	Y		
218167	27	117-21-28BCBA	104A	909	DO	100	OPVL	90	OPVL	OPVL				844 1960	Y		
218168	27	117-21-28BCBA	104A	913	DO	101	OPVL	94	OPVL	OPVL				848 1959	Y		
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218171	27	117-21-28BCAB	104A	900	DO	95	OPVL	87	OPVL	OPVL				835 1961	Y		
218172	27	117-21-28BCBA	104A	900	DO	99	OPVL	88	OPVL	OPVL				855 1960	Y		
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218174	27	117-21-28BCBA	104A	912	DO	99	OPVL	92	OPVL	OPVL				852 1960	Y		
218175	27	117-21-28BCAB	104A	915	DO	98	OPVL	90	OPVL	OPVL				850 1961	Y		
218176	27	117-21-28BCAB	104A	916	DO	105	OPVL	97	OPVL	OPVL				856 1961	Y		
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218185	27	117-21-28BCDB	104A	927	DO	121	OPVL	114	OPVL	OPVL				857 1963	Y		
218186	27	117-21-29ACCC	104A	910	DO	170	MTPL	97	OPVL	OSTP				835 1966	Y		
218190	27	117-21-29DCBD	104A	900	DO	228	OSTP	92	OPVL	OSTP				840 1973	Y		DOUG H
22944	27	28-24- 6C8BC	104A	905	IN	119	MTPL	100	OPGW	OSTP				861 1976	Y		ALLIED
223771	27	117-21-29CCCC	104B	946	DO	132	OPVL	127	OPVL	OPVL				856 1960	Y		
223773	27	117-21-30DACC	104B	962	DO					NRCD				872 1956	Y		MRS. H
223774	27	117-21-30ACDC	104B	953	DO	298	OSTP	145	OSTP	OSTP	1 198708		1 198708	863 1965	Y		ENGBER

223775 27 117-21-30AAAD 104B 919 DO 122 QBAA QBAA 865 1956 Y D.E. H

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223901	27	29-24-31AABD	104A	892	DO	203	OSTP		NRCO	OSTP				847 1956	Y		JEAN H
223936	27	28-24- 6AACB	104A	886	DO	51	QWTA			QWTA				857 1954	Y		CHARLE
223937	27	29-24-31BADB	104A	884	DO	225	OSTP	68	OPVL	OSTP				849 1948	Y		ROBERT
223938	27	28-24- 5ABBB	104A	885	CO	520	MTPL	195	OSTP	CJDN				825	Y		AMERIC
223952	27	117-21-29ADBA	104A	918	DO	156	MTPL	110	OPVL	OSTP				868 1959	Y		JAMES
223953	27	117-21-21CABD	104A	920	DO	131	OPVL	101	OPVL	OPVL				890 1953	Y		SIG A.
223954	27	28-24- 7CDBB	104A	920	DO	50									Y		W. A.
224064	27	117-21-19ABBC	104B	919	DO	122	OPVL	104	OPVL	OPVL				895 1952	Y		ALLEN
224065	27	117-21-18BAAC	104B	925		107	QWTA			QWTA				893 1949	Y		C.S. S
224066	27	117-21- 7ACEA	104B	928		129	OPVL	104	OPVL	OPVL				890 1954	Y		DONALD
224067	27	117-21- 7CBCA	104B	930	DO	189	QBAA			QBAA				870 1951	Y		
224804	27	117-21- 9BBCB	104A	905	IN	485	CJDN	85	OPVL	CJDN				847 1944	Y		METALL
225892	27	28-24- 8DCDD	104A	901	PS	97	QWTA			QWTA					Y		LAKE H
225893	27	28-24- 8ADDA	104A	853	PS	269		261	OPDC					834 1910	Y		LAKE H
226107	27	28-24- 8DBAA	104A	926	PS	201	QBAA			QBAA				884 1909	Y		HARRIE
226216	27	28-24-17DADC	104A	889	DO	290	OPDC	250	OPDC	OPDC					Y		R.D.MC
227755	27	117-21-17DCAC	104A	892	TW	70		68	OPVL					881 1978	Y		BORING
227756	27	117-21-17DCDB	104A	893	TW	74		70	OPVL					881 1978	Y		BORING
227757	27	117-21-17DCDC	104A	893	TW	72		71	OPVL					882 1978	Y		BORING
227758	27	117-21-17DCDC	104A	891	TW	70		65	OPVL					880 1978	Y		BORING
227759	27	117-21-20ABAB	104A	887	TW	74		73	OPVL					877 1978	Y		BORING
227760	27	117-21-20ABAC	104A	887	TW	77		72	OPVL						Y		BORING
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227905	27	117-21-20ABDC	104A	891	OT	7									Y		P-19
227906	27	117-21-20ABDC	104A	890	OT	23									Y		P-20
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227908	27	117-21-17ACDA	104A	916	OT	35									Y		P-22
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227910	27	117-21-17CAAB	104A	894	OT	15									Y		P-24
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227913	27	117-21-16ACCC	104A	887	OT	17									Y		P-27
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227915	27	117-21-18DBCC	104B	906	OT	17									Y		P-29
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227917	27	117-21-18CDAA	104B	915	OT	27									Y		P-31
227918	27	117-21-18CAAA	104B	920	OT	30									Y		P-32
227919	27	117-21-18DAD	104B	909	OT	22									Y		P-33
227920	27	117-21-17BCDD	104B	927	OT	927									Y		P-34 - 8
227921	27	117-21-17CBDD	104B	928	OT	52									Y		P-35
227922	27	117-21-16BBAD	104A	915	OT	48									Y		P-36
227923	27	117-21- 9CDBA	104A	896	OT	17									Y		P-37
227924	27	117-21- 8DACC	104A	922	OT	49									Y		P-38
227925	27	117-21- 8CBDC	104B	905	OT	22									Y		P-39
227926	27	117-21- 7DDAB	104B	899	OT	15									Y		P-40
227927	27	117-21-18ABCA	104B	912	OT	31									Y		P-41
227928	27	117-21-20ACB	104A	897	OT	22									Y		P-42
227929	27	117-21-20DBBB	104A	900	OT	15									Y		P-43
227930	27	117-21-20DAAA	104A	898	OT	16									Y		P-44

Y P-45

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433173 27 117-21-20ADC 104A MW 15 D 9 1987 CONTRO

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433174	27	117-21-20ADC	104A		MW	15								D 3 1987			CONTRO
433175	27	117-21-20ADC	104A		MW	47								D 20 1987			CONTRO
433176	27	117-21-20ADC	104A		MW	24								D 8 1987			CONTRO
433177	27	117-21-20AAC	104A		MW	27								D 10 1987			CONTRO
433178	27	117-21-20ADC	104A		MW	45								D 8 1987			CONTRO
433179	27	117-21-20ADC	104A		MW	45								D 9 1987			CONTRO
439809	27	117-21-17ADC	104A	933	MW	110	OPVL	99	OPVL	OPVL				897 198711	Y		ST. LO
439812	27	117-21-17DBAC	104A	923	MW	116	OPVL	93	OPVL	OPVL				888 198712	Y		ST. LO
439881	27	117-21-20BDC	104A		MW	86								D 12 1988			CRA
439882	27	117-21-20BDC	104A		MW	86								D 12 1988			CRA
439883	27	117-21-20BDC	104A		MW	88								D 12 1988			CRA
44239	27	28-24- 7	104A		MW	50											
443362	27	28-24-18	104A		MO	65								D 58 198807			CITY O
443466	27	28-24- 7BBA	104A		MW	40								D 35 1989			PARK N
443467	27	28-24- 7BBA	104A		MW	48								D 43 1989			PARK N
443468	27	28-24- 7BBA	104A		MW	48								D 40 1989			PARK N
443469	27	28-24- 7BBA	104A		MW	32											PARK N
443470	27	28-24- 7BBA	104A		MW	35											PARK N
443471	27	28-24- 7BBA	104A		MW	53								D 41 1989			PARK N
443472	27	28-24- 7BBA	104A		MW	33											PARK N
443473	27	28-24- 7BBA	104A		MW	20								D 16 1989			PARK N
443474	27	28-24- 7BBA	104A		MW	35								D 16 1989			PARK N
443482	27	28-24- 5BAB	104A		MW	19								D 10 1988			LAKE C
443483	27	28-24- 5BAB	104A		MW	18								D 8 1988			LAKE C
443539	27	28-24- 6CDD	104A		MW	40											PERKIN
443540	27	28-24- 6CDD	104A		MW	46								D 35 1989			PERKIN
443541	27	28-24- 6CDD	104A		MW	45								D 35 1989			PERKIN
443542	27	28-24- 6CDD	104A		MW	37								D 29 1989			PERKIN
444206	27	117-21-17AAA	104A		MW	32								D 25 1988			FINA O
444218	27	117-21-17AAA	104A		MW	36								D 27 1988			FINA O
444219	27	117-21-17AAA	104A		MW	36								D 29 1988			FINA O
452990	27	28-24- 7BDB	104A		MW	44								D 39 1989			INTER
452991	27	28-24- 7BDB	104A		MW	47								D 40 1989			INTER
453805	27	117-21-29	104A		IR	482								D111 1989			INTERL
457089	27	117-21-30	104B		DO	253								D100 1989			STARK,
457108	27	117-21-20	104A		DO	95								D 10			SWANSO
459164	27	28-24- 80CAD	104A	875	TW	140	MTPL	142	OPVL	OPVL				847 199002	Y		LARSON
459175	27	28-24- 8	104A		OT	50								D 34 1990			LARSON
459176	27	28-24- 8	104A		OT	55								D 30 1990			LARSON
459177	27	28-24- 8	104A		OT	53								D 20 1990			LARSON
462146	27	117-21- 8BAB	104B		DO	120								D 17 1990			HIRT,
462901	27	28-24- 5BAA	104A		RC	23								D 9			LAKE C
462929	27	117-21-17DC	104A		MW	70								D 47 1990			CITY O
462932	27	117-21-16CACD	104A	892	MW	85	QBAA			QHUG				854 199011	Y		ST. LOU
462934	27	117-21-16CCDD	104A	923	MW	77	QBAA			QHUG				890 199011	Y		CITY O
463707	27	28-24-18	104A		DO	67								D 20 1991			NOONAN
465077	27	28-24-18DAB	104A		MW	30								D 25 1990			KUNZ O
465078	27	28-24-18DAB	104A		MW	30								D 25 1990			KUNZ O
465079	27	28-24-18DAB	104A		MW	29								D 23 1990			KUNZ O

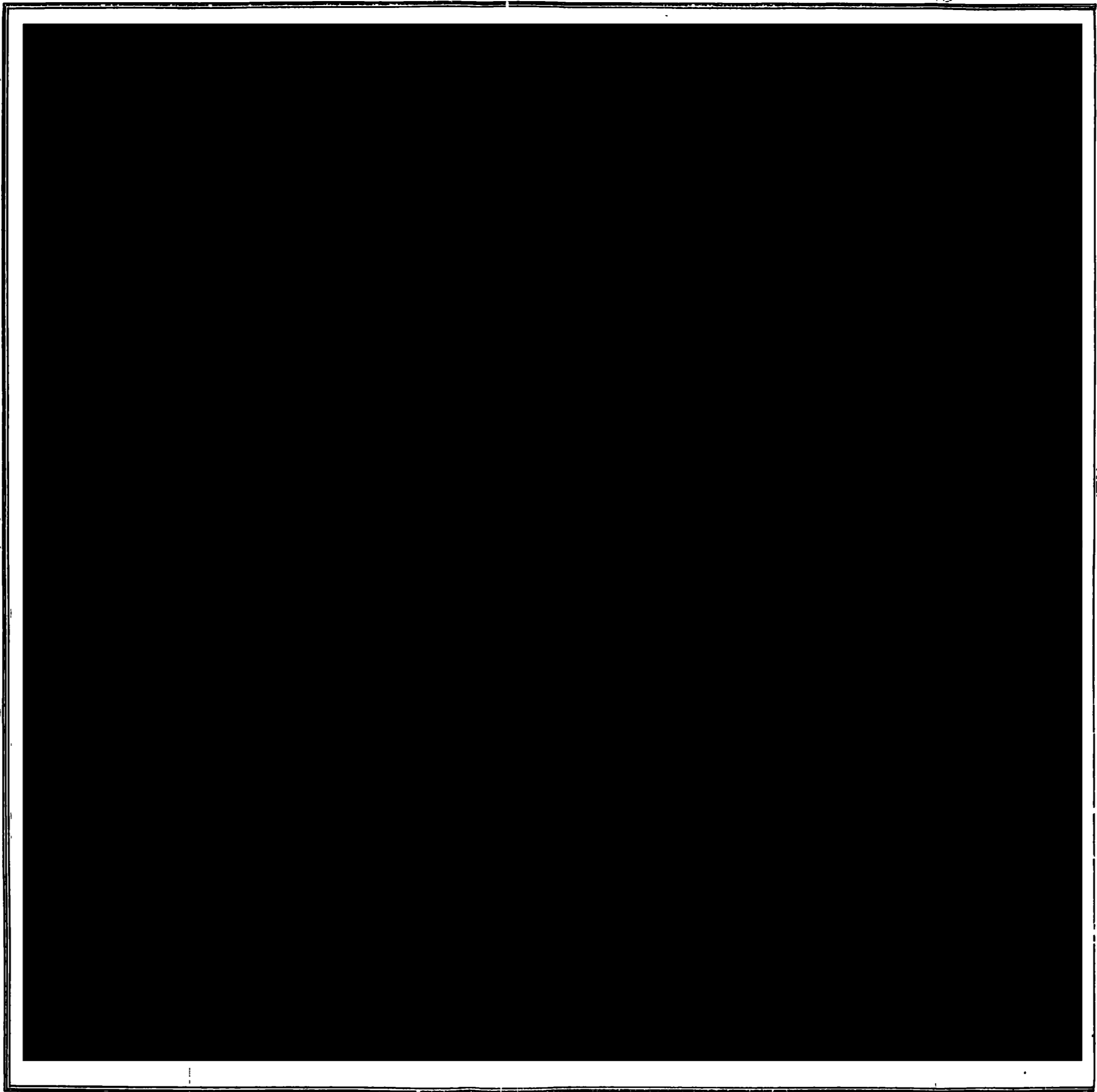
465275 27 28-24-18DAA 104A MW 29 D 23 1990 CITY O

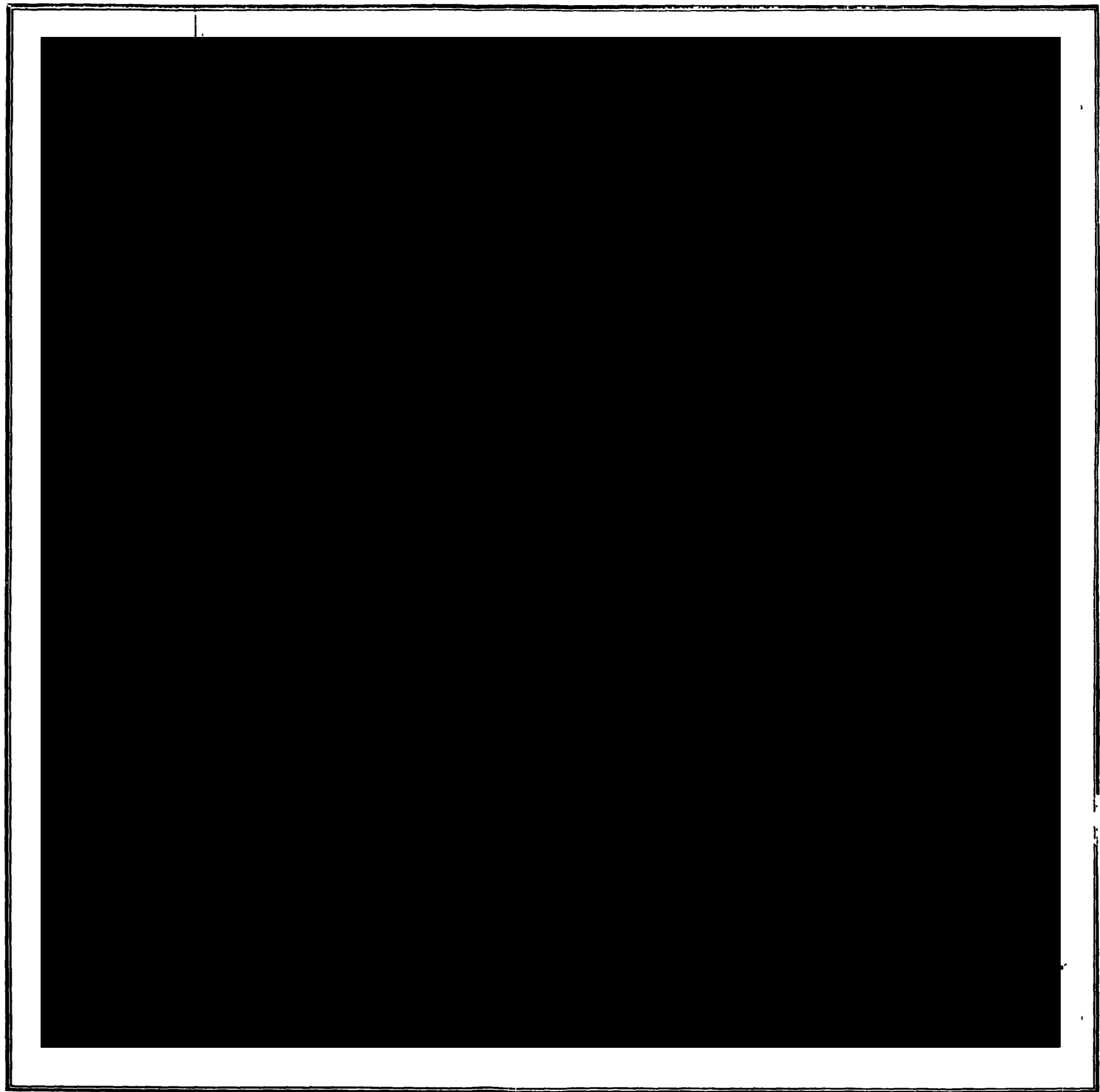
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469611	27	28-24- 78B	104A		MW	79								D 45 1990			CITY O
469612	27	28-24- 78B	104A		MW	79								D 37 1990			CITY O
469613	27	28-24- 78B	104A		MW	79								D 45 1990			CITY O
472195	27	28-24- 68BD	104A		MW	24								D 14 1991			GASSEN
472196	27	28-24- 68BD	104A		MW	24								D 14 1991			GASSEN
472197	27	28-24- 68BD	104A		MW	23								D 13 1991			GASSEN
472948	27	28-24-17BCC	104A		MW	25											HOLIDA
472949	27	28-24-17BCC	104A		MW	26											HOLIDA
472950	27	28-24-17BCC	104A		MW	26											HOLIDA
478357	27	28-24-18DDD	104A		MW	51								D 45 1991			UNO-VE
478358	27	28-24-18DDD	104A		MW	49								D 44 1991			UNO-VE
478359	27	28-24-18DDD	104A		MW	50								D 44 1991			UNO-VE
480919	27	117-21-16AAA	104A		OT	41								D 25 1992			CONOCO
483786	27	28-24- 6AAA	104A		MW	23											AMOCO
483787	27	28-24- 6AAA	104A		MW	26								D 19			AMOCO
483788	27	28-24- 6AAA	104A		MW	23								D 17			AMOCO
483789	27	28-24- 6AAA	104A		MW	27								D 21			AMOCO
483833	27	28-24-18ADDC	104A		MW	31								D 21 1992			LUND,
486701	27	29-24-31	104A		MW	29											1220 A
486702	27	28-24- 6AAA	104A		MW	20											MINIKA
486703	27	28-24- 6AAA	104A		MW	20											MINIKA
486704	27	28-24- 6AAA	104A		MW	20											MINIKA
486705	27	29-24-31	104A		MW	30											ST. LO
486706	27	29-24-31	104A		MW	29											HENNEP
486707	27	29-24-31	104A		MW	29											HENNEP
498007	27	28-24-18DDC	104A		MW	34								D 27 1992			LUND,
498009	27	28-24-18DDC	104A		MW	32								D 22 1992			LUND,
498011	27	28-24-18DDC	104A		MW	37								D 26 1992			LUND,
498789	27	28-24-17BCC	104A		MW	24								D 20 1991			HOLIDA
503612	27	28-24-17DAA	104A		MW	34											AMOCO
503613	27	28-24-17DAA	104A		MW	34											AMOCO
503614	27	28-24-17DAA	104A		MW	40											AMOCO
503615	27	28-24-17DAA	104A		MW	39											AMOCO
503616	27	28-24-17DAA	104A		MW	42											AMOCO
503618	27	28-24-17DAA	104A		MW	39											AMOCO
505670	27	28-24- 5	104A		PS	285								D 15 1990			MPLS.
505958	27	28-24-18GBB	104A		MW	60								D 54 1989			CITY O
508116	27	28-24- 8	104A		MO	390								D 84 1989			MPLS.
511166	27	28-24- 5BAB	104A		MW	17								D 8 1990			LAKE C
512154	27	28-24-17	104A		OT	30								D 13 1990			CITY O
512155	27	28-24-17	104A		OT	27								D 13 1990			CITY O
W00010	27	117-21- 7DCCA	104B	915	DO	100	OPVL							900 1988			JANOFF
W00013	27	117-21- 8CDCC	104B	930	DO	74	QBAA							885 1988			RAUSCH
W00014	27	117-21- 7DCCC	104B	920	DO	56	QWTA							900 1988			GARBER
W00027	27	117-21- 7ACCC	104B	925	DO	110	OSTP							894 1988			FLEMING
W00028	27	117-21- 7ADD8	104B	910	DO	64	QWTA							896 1988			SIMMER
W00029	27	28-24- 7BCBB	104A	885	CO	22											BILLMA
W00066	27	117-21- 7ACCC	104B	925	DO	75	QWTA							870 1988			COUSIN
W00069	27	28-24- 7CAAC	104A	920	DO	55	QWTA							895 1988			WOLFGR

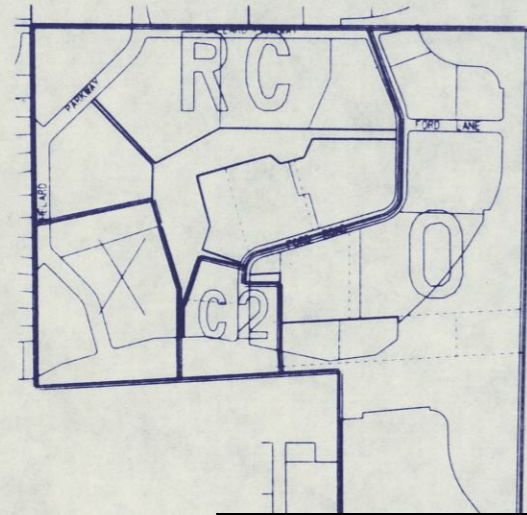


**APPENDIX 3**

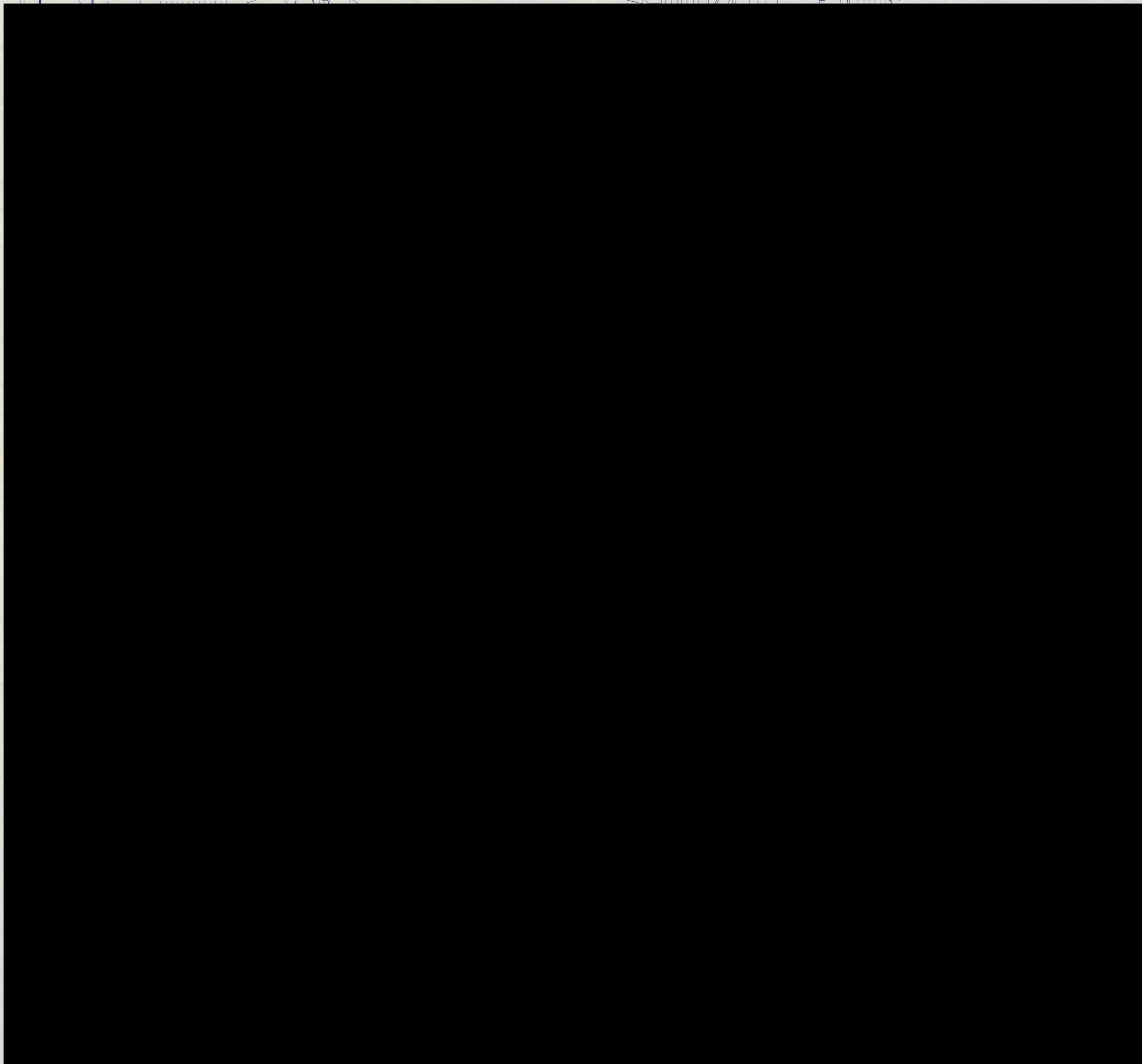
**City of St. Louis Park Zoning Records  
1949 and 1993**







# ST. LOUIS PARK ZONING MAP



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D. NO. CERTIFIED

B



**SECTION B**

**QUALITY ASSURANCE PROJECT PLAN**

## **QUALITY ASSURANCE PLAN**

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### **APPENDICES**

Appendix 1	ENSR Standard Operating Procedure 1005: Numerical Analysis and Peer Review
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**QUALITY ASSURANCE PLAN**

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## **QUALITY ASSURANCE PLAN**

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### **1.0 INTRODUCTION**

#### **1.1 Background**

ENSR Consulting and Engineering (ENSR) and the City of St. Louis Park will complete certain tasks in fulfillment of the Consent Decree and Remedial Action Plan (CD-RAP) for the Reilly Tar & Chemical (Reilly) Site. This Quality Assurance Project Plan (QAPP) pertains to all work to be performed by ENSR and other contractors to investigate suspected leaking multi-aquifer wells affecting the Prairie du Chien-Jordan, Iron-ton-Galesville, or Mt. Simon-Hinckley Aquifers. Activities to be undertaken during the investigation include: existing record review; measurements of well diameter, static water level, and well depth; caliper logging; spinner logging; natural gamma logging; downhole television logging; and ground water sampling and analysis for Drinking Water Criteria and Phenolics concentration. Further details on the work to be performed, its purpose, and the methodology to be employed, may be found in the Site Management Plan. This work is scheduled for completion within one year of approval of this plan pursuant to Section 10.1.2 of the CD-RAP.

#### **1.2 Quality Objectives**

The purpose of this QAPP is to define the Quality Assurance and Quality Control (QA/QC) provisions to be implemented to ensure that:

- The data generated will conform to the specifications of the Site Management Plan
- The work is performed in an efficient manner
- Field records generated during the course of the field work are complete and accurate
- The objectives of the Consent Decree are met

## **QUALITY ASSURANCE PLAN**

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### **2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES**

The project organization is illustrated in Figure 2-1. The Project Manager, Mr. William Gregg, will oversee and coordinate all project activities and will conduct correspondence with St. Louis Park. The Project Manager is also responsible for maintaining records of the work performed on the project and for archiving those records in the Central File upon completion of the work. The Project Quality Assurance Officer is responsible for ensuring that this plan is implemented and that project data undergo technical and peer review, as necessary. The U.S. Environmental Protection Agency, Minnesota Pollution Control Agency, and Minnesota Department of Health will have the opportunity to audit, comment on, or otherwise participate in Quality Control Procedures, and inspect the work done on this project at any time.



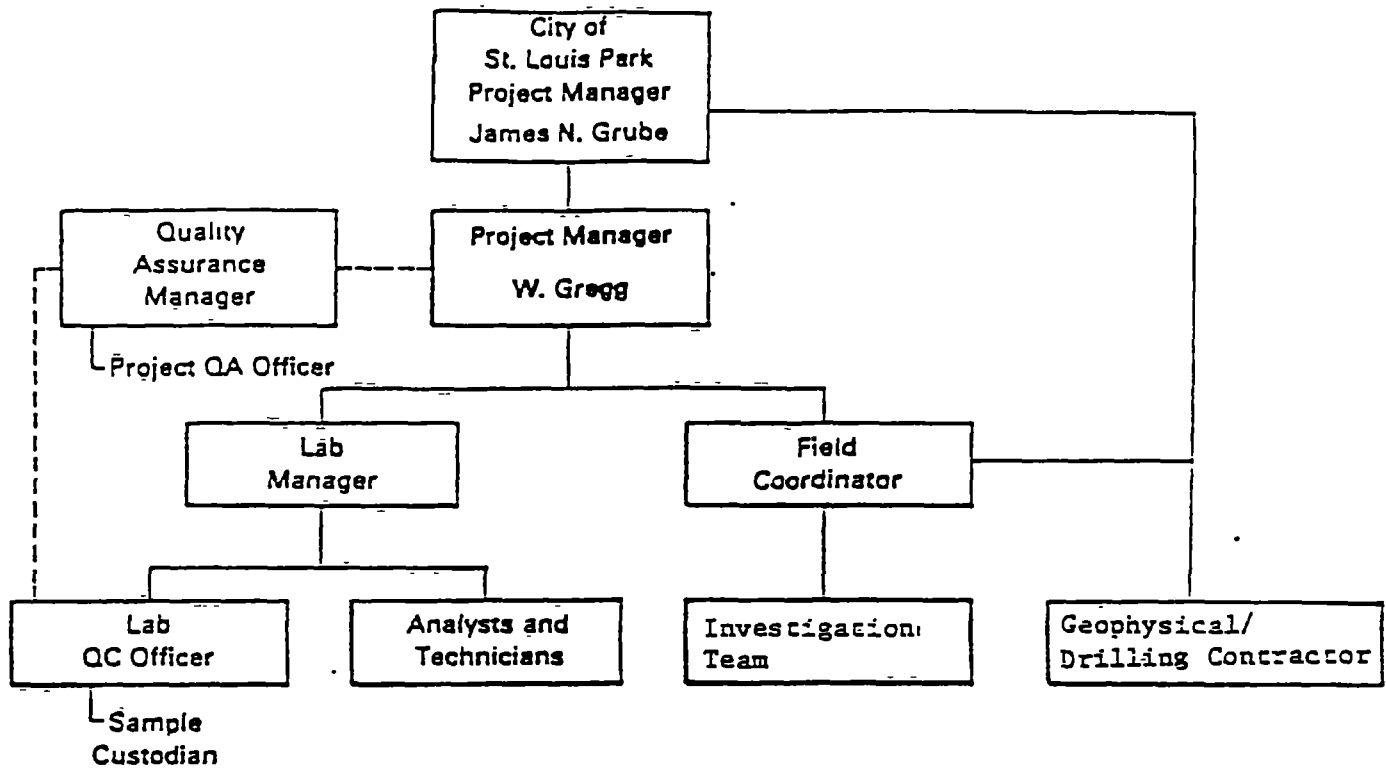


Figure 2-1  
 Project Organization

## **QUALITY ASSURANCE PLAN**

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### **3.0 QA/QC-FIELD ACTIVITIES**

#### **3.1 Training**

All field personnel working on the Leaking Multi-Aquifer Well Investigation (including subcontractors) will receive training on the purpose of the work, the procedures to be employed and the project Health and Safety Plan.

#### **3.2 Subcontractor Quality Control**

Subcontractor quality control is that system of activities which ensures that products or services obtained from subcontractors fulfill the needs of the project.

Periodic quality control inspection of each contractor will be performed by the ENSR Project Manager to evaluate adherence to the QAPP and the project Health and Safety Plan. Inspection will include (as appropriate):

- Type and condition of equipment
- Calibration procedures
- Personnel qualifications
- Decontamination procedures
- Documentation
- Level of personal protection

Decontamination of down-hole equipment (e.g., geophysical instruments or drilling tools) will be accomplished by washing with soap and water and/or by steam cleaning between wells, as appropriate.

Results of the quality control inspection will be entered in the field notebook.

## **QUALITY ASSURANCE PLAN**

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### **3.3 Document Control and Recordkeeping**

Document Control for the remedial investigation serves a two-fold purpose. It is a formal system of activities that ensures that:

1. All participants in the project are promptly informed of revisions of the QAPP
2. All critical documents generated during the course of the work are accounted for during and at the end of the project

This QAPP and all Standard Operating Procedure (SOP) documents have the following information on each page:

- Document number
- Page number
- Total number of pages in document
- Revision number
- Revision date

When any of these documents are revised, the affected pages are reissued to all personnel listed as document holders, with updated revision numbers and dates. Issuance of revisions is accompanied by explicit instructions as to which documents or portions of documents have become obsolete.

Control of, and accounting for documents generated during the course of the project are achieved by assigning the responsibility for document issuance and archiving. For the Investigation Plan for Leaking Multi-Aquifer Wells, the ENSR Project Manager/Field Coordinator has this responsibility.

Documentation for the project will either be recorded in non-erasable ink, or will be photocopied promptly upon completion, and the photocopies dated. All documents will be signed by the person completing them.



## **QUALITY ASSURANCE PLAN**

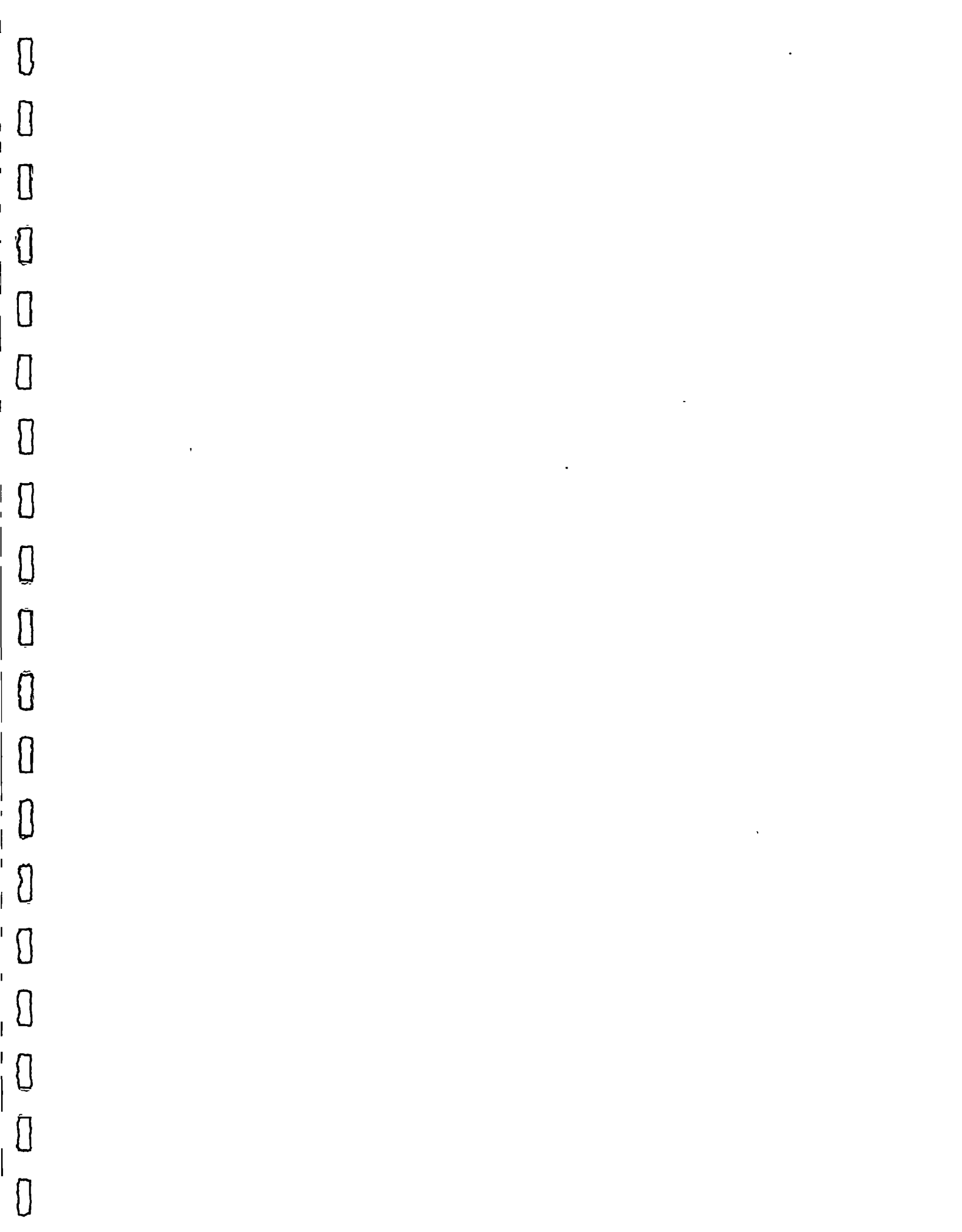
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### **3.4 Ground Water Sampling**

All ground water sampling and analysis called for in the Site Management Plan will be conducted in accordance with the Sampling Plan for 1994 (CD-RAP Section 3.2). The Sampling Plan for 1994 includes detailed information on sampling equipment, sampling procedures, the decontamination of sampling equipment between wells, and parameters to be analyzed, analytical methods and detection limits.

### **3.5 QA/QC Measures**

Final QA/QC measures will satisfy local, state, and federal criteria and the objectives of the CD-RAP.



## **QUALITY ASSURANCE PLAN**

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### **4.0 NUMERICAL ANALYSIS AND PEER REVIEW**

All numerical analyses, including manual calculation, mapping, and computer modeling will be documented and subjected to quality control review in accordance with ENSR SOP 1005, *Numerical Analysis and Peer Review* (Appendix 1). All records of numerical analyses will be legible, reproduction-quality and complete enough to permit logical reconstruction by a qualified individual other than the originator.



## **QUALITY ASSURANCE PLAN**

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### **5.0 AUDITS AND CORRECTIVE ACTION**

ENSR conducts periodic audits to assess the level of adherence to QA policies, procedures, and plans.

Whenever quality deficiencies are observed that warrant immediate attention, formal corrective action request forms are issued to the Project Manager by the QA Department. The QA Department retains one copy of the form when it is issued. The Project Manager completes the form and signs it when corrective action has been implemented, and returns the original to the QA Officer to close the loop.

The QA Department maintains a record of all corrective action requests and reports their status to ENSR management in a quarterly report.

Should an audit be conducted on the Leaking Multi-Aquifer Wells Investigation work, St. Louis Park will be apprised of the audit findings and of any corrective action that is requested and performed.



**APPENDIX 1**

**ENSR Standard Operating Procedure 1005:  
Numerical Analysis and Peer Review**

Title: Numerical Analysis and Peer Review

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## 1. Purpose and Applicability

This document describes ENSR's procedure for ensuring that all data analyses for site investigations and other studies are correct and consistent with project objectives and are legibly and retrievably documented. The purpose of the documentation is to permit peer review and reconstruction of the logic by which any conclusions were deduced.

## 2. Responsibilities

The responsibility for implementation of this procedure on each project rests with the person performing the calculations.

The project manager is responsible for ensuring the completeness of project files.

## 3. Method of Documentation

### 3.1 Manual Calculations

- 3.1.1 All calculations shall be documented in legible, reproduction-quality records. The records shall be complete enough to permit logical reconstruction by a qualified person other than the originator.
- 3.1.2 Calculations should be maintained in division files during the project, and shall be placed into the central project file at the end of the project.
- 3.1.3 Each calculation should be assigned a unique identification number by an appropriate person. The calculations may be consecutively numbered within a given project. (e.g., D010-1, D010-2,...).
- 3.1.4 Calculations for each project should be kept in a binder with an index sheet.
- 3.1.5 Records of calculations shall contain, on each page, the initials of the originator and reviewer, the date, the project number, calculation number and page number.



Title: Numerical Analysis and Peer Review

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3.1.6 Each calculation shall have a cover page which should contain:

- o client name,
- o project name and number,
- o calculation name and number,
- o total number of pages in the calculation,
- o date,
- o originator's signature.

3.1.7 The complete record of any series of calculations for a project shall have a cover page containing at least the following:

- o Statement of purpose
- o Brief description of method
- o Assumptions and justifications
- o Reference to input data sources
- o All numerical calculations, showing all units
- o Results
- o Reference to associated computer output
- o Signature of originator and date

### 3.2 Computer Programs

Documentation and qualification procedures for ENSR-written computer programs are detailed in ENSR SOP 1006. Each revision of each program is documented in an annotated hard copy of the software. Annotations should be sufficient to permit a qualified individual other than the originator to understand how the program works. Minimum contents of such a record are:

- o Program name
- o Originator's name
- o Input parameters
- o Date of printout
- o Revision number
- o Each page should be numbered, and should indicate the total number of pages in the record

These records are archived along with the qualification records in a central file.

Title: Numerical Analysis and Peer Review

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### 3.3 Computer Program Output

3.3.1 All final computer program output used in a given project will be retained in hard copy in the project files. The output should be bound and assigned a unique reference number.

3.3.2 Each program output record shall contain at least the following:

- o Name and revision date of program or model used
- o Input parameters
- o Name of user
- o Date of run

### 3.4 Drawings

3.4.1 All drawings shall be labeled with a unique identification number, which might consist of the project number and a sequential drawing number (e.g. D010-1, D010-2,...).

3.4.2 All drawings shall be constructed using standardized symbols and nationally-recognized drafting standards

3.4.3 All drawings shall be signed and dated by the originator and checked, signed and dated by a reviewer.

3.4.4 All drawings to be published must be approved for issue by the project manager or his designee.

## 4. Method for Review and Revision

4.1 All calculations and drawings for each project shall be verified by a qualified person other than the originator.

4.2 Verification shall consist of a thorough check of the calculations for the following elements:

- o Appropriateness of method,
- o Appropriateness of assumptions,
- o Correctness of calculations,
- o Completeness of references,
- o Completeness of record.
- o Correctness of input parameters for calculations using computer programs.

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**SECTION C**

**HEALTH AND SAFETY PLAN**

## **1.0 HEALTH AND SAFETY PLAN**

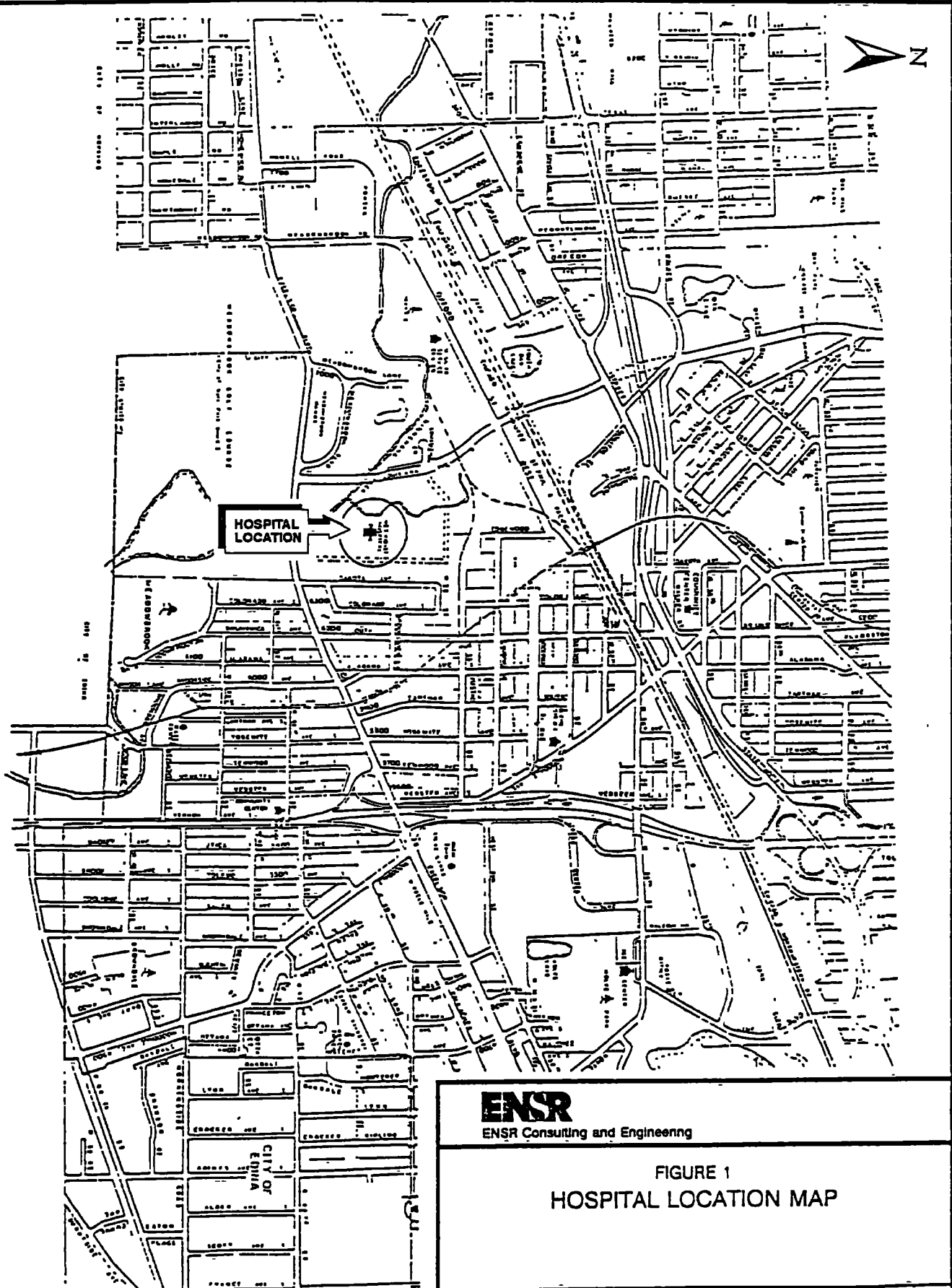
Because the field work for this project involves only limited field work, there is no specific Health and Safety Plan for investigating deep multi-aquifer wells. However, as in all work that may involve heavy machinery such as pump trucks or drilling rigs, common sense safety rules apply. Hard hats will be worn in the vicinity of heavy machinery, and ear, eye, foot and hand protection should be worn, if needed.

If a worker is injured, first aid procedures will be followed and, if necessary, emergency medical attention will be sought. The names and numbers for emergency services are provided below:

Fire Department	911
Ambulance	911
Police Department	911
Methodist Hospital	932-5000

Methodist Hospital is located at 6500 Excelsior Blvd. in St. Louis Park (see attached map).

Any project work that involves sampling ground water will be subject to the requirements of the Health and Safety Plan contained in the Sampling Plan for 1994.



**ENSR**

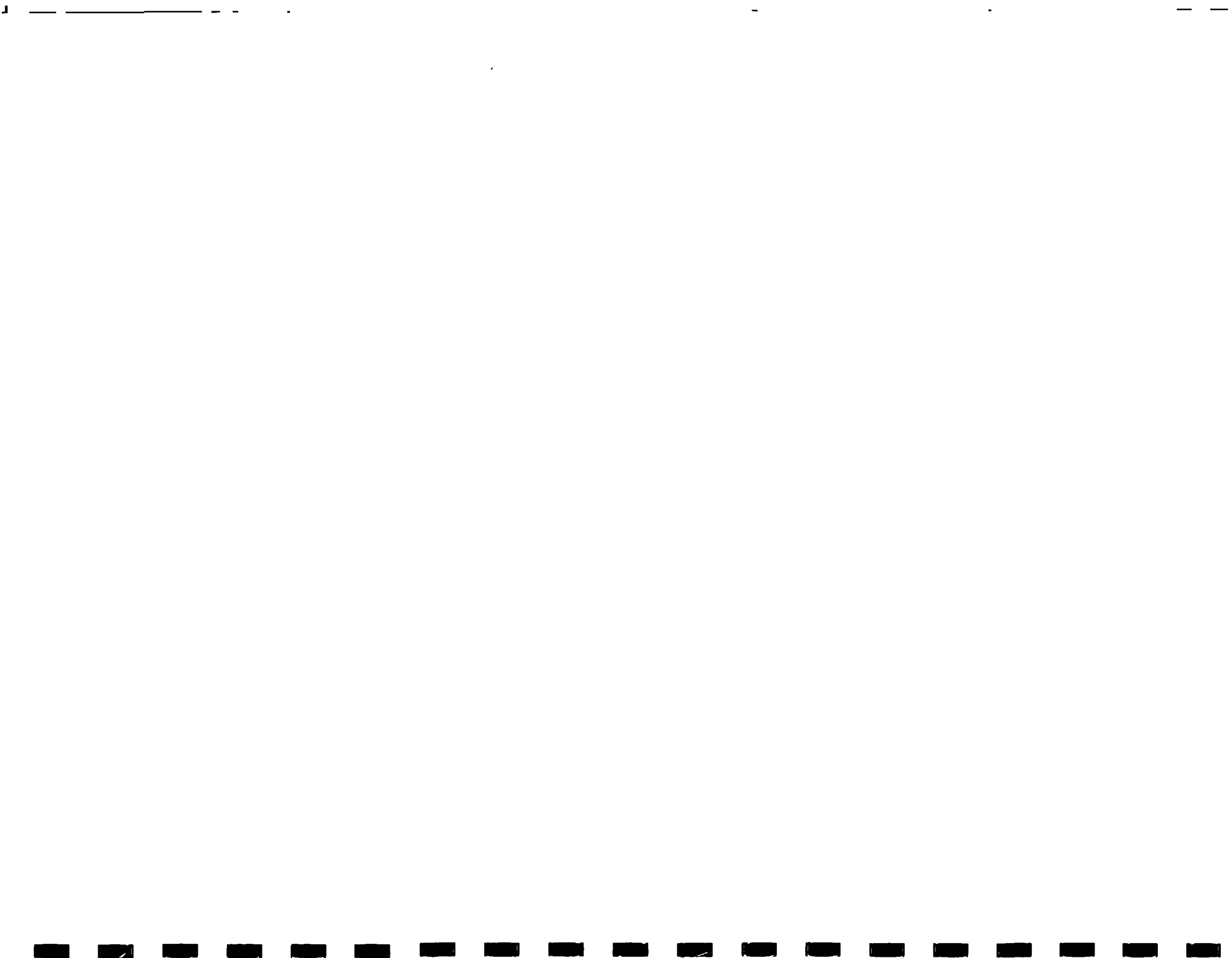
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FIGURE 1  
HOSPITAL LOCATION MAP

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**SECTION D**  
**COMMUNITY RELATIONS PLAN**

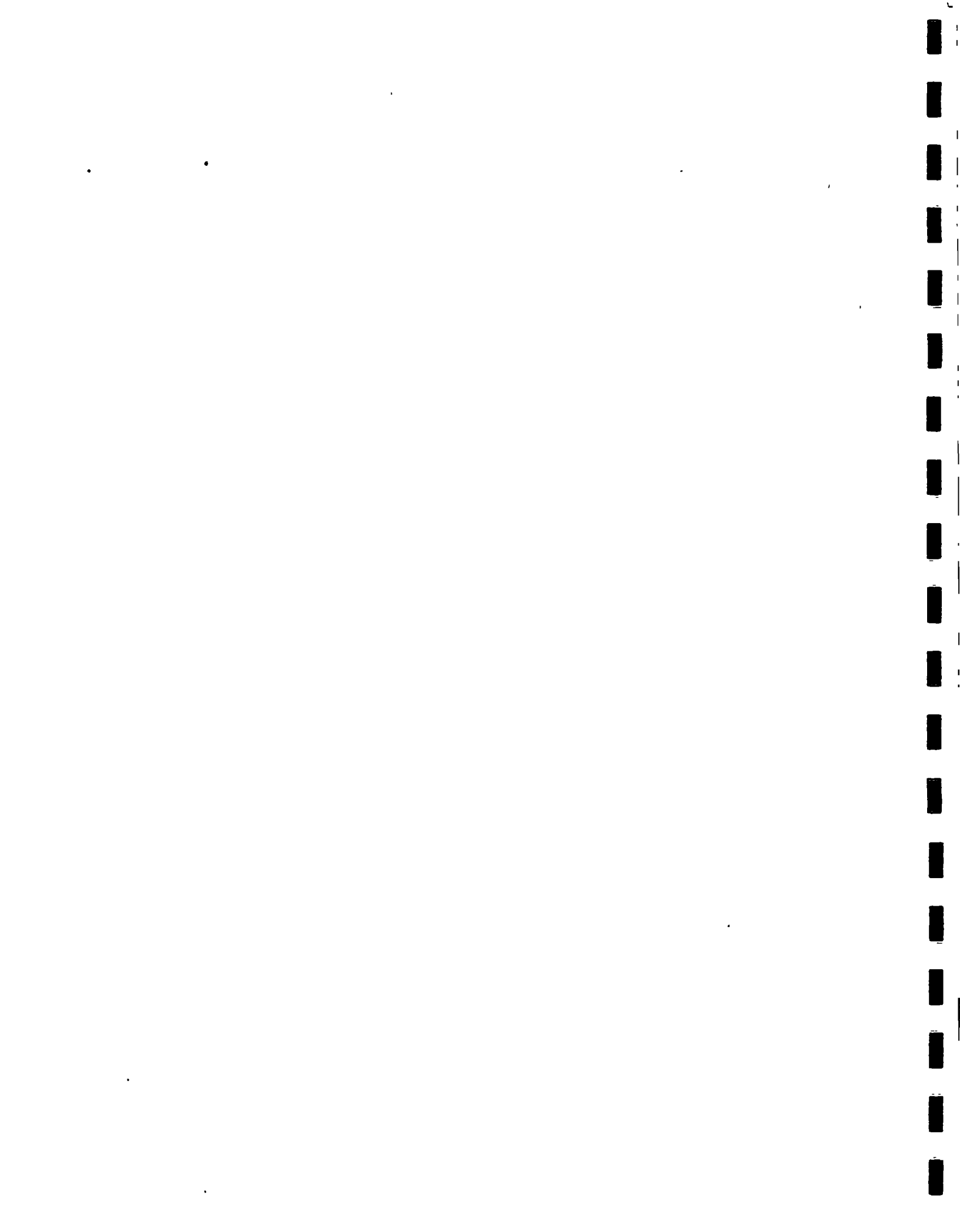


## 1.0 COMMUNITY RELATIONS PLAN

The Investigation Plan for Deep Multi-Aquifer Wells is to be completed in accordance with the Consent Decree-Remedial Action Plan for Reilly Tar & Chemical Corporation's St. Louis Park, Minnesota, NPL Site. All community relations programs related to this work will be coordinated through the following agencies:

United States	Ms. Judy Beck United States Environmental Protection Agency (312) 353-1325
State of Minnesota	Ms. Susan Brustman Minnesota Pollution Control Agency (612) 296-7769
City of St. Louis Park	Mr. James Grube City of St. Louis Park (612) 924-2551

Information necessary to conduct the Community Relations Plan will be provided by the City and Reilly.







## **ENSR Consulting and Engineering**

Alabama	Florence	(205) 740-8240
Alaska	Anchorage	(907) 276-4302
California	Los Angeles	
	Camarillo	(805) 388-3775
	Newport Beach	(714) 476-0321
	San Francisco	(415) 865-1888
Colorado	Fort Collins	(303) 493-8878
Connecticut	Hartford	(203) 657-8910
Illinois	Chicago	(708) 887-1700
Massachusetts	Boston	(508) 635-9500
Minnesota	Minneapolis	(612) 924-0117
New Jersey	Mahwah	(201) 818-0900
	New Brunswick	(908) 560-7323
Pennsylvania	Pittsburgh	(412) 261-2910
South Carolina	Rock Hill	(803) 329-9690
Texas	Dallas	(214) 960-6855
	Houston	(713) 520-9900
Washington	Seattle	(206) 881-7700
Puerto Rico	San Juan	(809) 769-9509